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## AN INEXPENSIVE WATER WORKS

Water from Irrigation Canal Clarified in Settling Basins, Pumped to Tank by Oil Engine, and Distributed Through Pipes Two Inches to Ten Inches Diameter—Itemized Cost

By EDWARD P. BAILEY

THE city of Brawley, in the Imperial Valley, California, has recently completed a water works system interesting from the standpoint of what can be obtained in the way of an efficient domestic supply for a small expenditure. In the Imperial Valley the domestic water supply is quite as serious a problem to-day as was in years past that of water irrigation. The canal water carries a great deal of silt and is of a typical chocolate color. This water from the irrigation canals is the first, and in most cases the only available, supply for domestic purposes in the valley.

In the early part of 1910 Brawley, which had a population of 881, according to the United States census of that year, voted \$40,000 bonds for the acquisition of a water works system. Shortly before voting the bonds an artesian flow of potable water had been struck in the city of Holtville, at a depth of about 1,000 feet. The popular demand at Brawley was consequently that a test well be driven there, to 2,000 feet if necessary, in search of artesian water. Subsequently \$10,000 was set aside for this purpose from the water fund by the trustees. In the spring of 1911 a depth of 2,000 feet was reached in a well put down by the hydraulic process, which started with an 8-inch casing and ended with a 4-inch casing. The only water struck was found to be brackish; no artesian flow was encountered, nor any strata that would have made pumping feasible.

The city, in order to provide an adequate supply for domestic purposes, utilizing the available canal water, purchased a privately owned system, inadequate for domestic supply and which afforded no fire protection whatever, together with the necessary lands and water stock which would entitle the city to an ample supply of canal water. This and the money spent on the test well reduced the funds available for the water works system to about \$25,000.

Of the works purchased the only useful parts were sev-

eral thousand feet of 2-inch galvanized pipe. It therefore required considerable study and planning to make both ends meet, which fact will be better understood after considering the freight rates to Imperial Valley. In addition to the Los Angeles terminal rate, the rate on cast iron pipes was \$14.60 per ton, and on machinery \$14.80 per ton, with a similar rate on steel tanks.

The plan finally adopted was as follows: Canal water was to be settled in two settling basins of 300,000 gallons capacity each; from which it was to be pumped into a 50,000-gallon steel tank, the bottom of which was fifty feet from the ground. The pumps were direct-connected to the mains, and only the surplus over the consumption would flow into the tank. While it had been the intention to erect a tank larger and of greater height, it was found that funds were not sufficient for this purpose.

The city of Brawley at present has a system of ditches for the irrigation of town lots which causes considerable cost of maintenance, owing to the silting up of the small ditches. It is the intention as the town grows and additional bonds can be issued to eliminate the use of unsettled canal water and to supply settled water for those ditches from the domestic pipes. For domestic pressure and fire pressure there will be erected a tank of not less than 100,000 gallons capacity 100 feet high. By limiting the use of irrigation water to certain hours of the evening, water can then be pumped directly into the mains for

this purpose at low pressure, with the present steel tank to serve as an equalizer or stand pipe. For the present, fire pressure is obtained by direct pumping into the mains.

The cost of pumping was another item that had to be considered. Electric power costs five per cent. per kilowatt-hour, and oil fifteen cents per gallon.

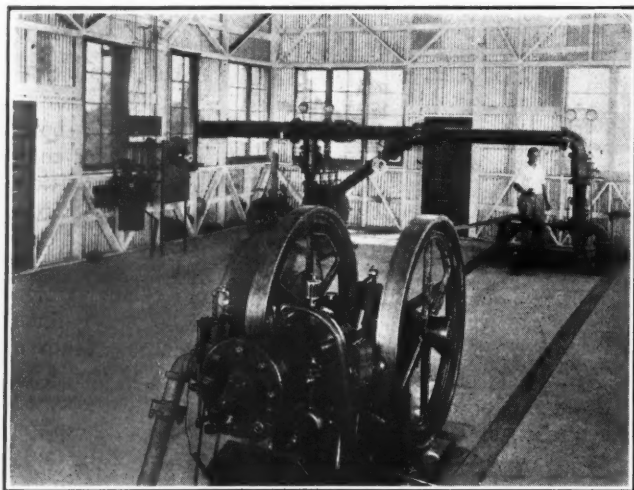
The most economical distributing system for a small town was believed to be a system of 2-inch laterals for



BRAWLEY PUMPING STATION AND TANK.

domestic supply only, and of 4 to 10-inch mains to which the hydrants are attached. There being a good deal of 2-inch pipe already laid at Brawley, it was combined into this kind of a system by the use of 4, 6, 8 and 10-inch mains.

The system as now constructed covers about one-half square mile of area, and comprises two settling basins, a pumping plant, an elevated steel tank, and the distributing system. The settling basins, located three-quarters of a mile from the center of population, are 80 x 150 feet, 5 feet deep, with flat slopes. They are intended to be operated in alternation, and cleaned by scraping after drying for several days in the sun. They are connected by a system of vitrified pipe with the pumping sumps. Water is settled for 24 hours before being used. Their cost was approximately \$1,500.



INTERIOR OF PUMPING STATION.

The pumping plant consists of two units, one being a 20-horsepower distillate engine, belted to a No. 4 centrifugal pump of the United Iron Works of Oakland, with a capacity of 500 gallons per minute, 75-foot head; the second unit a 40-horsepower Westinghouse electric motor, direct-connected to a 2-step, 4-inch centrifugal pump with a capacity of 500 gallons per minute against 160-foot head sufficient for two fire streams. The first unit is used for the pumping of domestic supply, the second unit as a fire pump, pumping directly into the mains with the tank shut off. In order to increase the fire pressure, an arrangement has been provided whereby Pump No. 1 may discharge into Pump No. 2, thus delivering a combined theoretical head of approximately 230 feet. This pressure was utilized for testing the distributing system. The general arrangement and operation of the fire pump was made as simple as possible, so as to enable members of the volunteer fire department to operate the pump in the absence of the mechanic.

The cost of the machinery was \$4,150. This amount may appear high, but it is to be considered that the whole water works system was let as one contract, and the figures at which the contractor was paid for the various items may not in every instance represent cost plus an equal percentage of profit.

The pump house is a substantial timber building with galvanized sheet iron walls and roofing. The roof trusses were designed for being used in mounting and dismounting machinery. The building is well ventilated, screened and painted, and was let for the sum of \$1,889.

The steel tank and tower are of standard pattern, semi-spherical bottom, made by the Des Moines Bridge and Iron Works; capacity 50,000 gallons, height 50 feet to balcony; provided with separate overflow and discharge pipe. Cost \$3,900 complete.

It was found upon inspection of the old distributing system that the galvanized pipe, which had been buried for years, showed little attack from rust. The soil at Brawley is lighter and contains less alkali than that in the central part of the valley. In order to save cost, it was decided to install 2 and 4-inch galvanized pipe and 6, 8 and 10-inch cast iron pipe, Class B. The contract prices of the pipe were as follows: 4,000 ft. of 2-in. galvanized pipe at 36c. laid; 6,150 ft. of 4-in. galvanized pipe at 66c. laid; 1,780 ft. of 6-in. cast iron pipe at \$1.04 laid; 33,800 ft. of 8-in. cast iron pipe at \$1.37 laid; 175 feet of 10-in. cast iron pipe at \$1.76 laid; this price including specials, but not the valves.

The contract was for the completion of the work within 100 days from date of letting and the contractor fulfilled the obligation, with the exception of the steel tank, which was delayed in shipment. The system was tested under the combined pressure of the two pumps and no leaks were discovered. The hydrants were of the Los Angeles pattern.

The system was designed and built under A. L. Sondergerger, of Los Angeles, as consulting engineer, and C. J. Park, city engineer of Brawley, as engineer in charge. George A. Rogers, of Los Angeles, was the general contractor.

## DISPOSING OF SEWAGE SLUDGE

Sludge Presses, Centrifugal Drying Machines, Burial, Lagooning—Removing Grease and Drying by Heat for Fertilizer

THIS subject was treated at some length in a paper before a recent meeting of the Society of Chemical Industry of England, by J. Grossmann. He considered that the cheapest and simplest way of disposing of sludge is carrying it to sea in specially constructed boats and dumping it there. This method is available to only a few cities, however, and there is the danger that the tides will bring this sludge back near the coast and contaminate shell fish. This method is said to cost about 82 cents per ton (13.2 per cent. dry substance) in Glasgow; 90 cents a ton (21 per cent. dry substance) at Salford; \$1.14 a ton (8 per cent. dry substance) in London, and \$3.40 per ton (10 per cent. dry substance) at Southampton.

Most of the English cities and towns condense the sludge in filter presses. A centrifugal drying machine constructed by a German firm has been tested in Berlin, but this appears to cost about 50 per cent. more than filter pressing; in addition to which only about 60 per cent. of the sludge passing through the machine is effectively dealt with, and the rest has to be settled again and passed through the machine a second time. Several of these machines are said to be working at Frankfort, where it has been necessary to install a drying machine for still further reducing the moisture to permit handling.

Mr. Grossmann made some calculations on the cost of drying sludge by heat. Taking a sludge containing 80 per cent. water, which he states can be obtained by plain settling, he estimates the cost necessary to reduce this amount of water to 66 2-3 per cent., such as would be obtained by filter pressing. He has found it possible with a special machine to evaporate nearly 6 pounds of water per pound of low grade coke costing from \$1.20 to \$1.80 per ton, and consequently calculates that the reduction from 80 per cent. water to 66 2-3 per cent. could be obtained at a fuel cost of from 40 cents to 60 cents per ton of dry material; whereas to obtain the same results by filter pressing costs from \$2 to \$3 per ton.

The disposal of sludge by shallow burial in the ground is practicable only where large tracts of land are available close to the plant, and the limit of use of a given area will in time be reached and there is the additional possible



danger of transportation of pathogenic germs by flies, etc. Lagooning has the same objections and "there is probably no case in which lagooning does not produce a nuisance."

Experiments on the value of sludge as a manure, made for the Royal Commission, caused them to report that no sludge is worth \$2.50 per ton of the dry matter in it; and this, says Mr. Grossmann, shows that sewage sludge can never become a marketable manure which will pay the producer. "Small works situated in the center of a large farming district may be able to dispose of their sludge to farmers who may find that the sparing use of sludge on their land pays for the cost of cartage; but in the majority of cases it would be necessary to distribute the sludge at a considerable distance from the works, and in this case the cost of cartage, commission to salesmen and other items would, on an average, far exceed the value of the sludge." This low value as fertilizer the author explains by the considerable amount of grease, soap, etc., mixed with the sludge, the effect of these being to form a waterproof coating in the top of the soil which is very detrimental. From this it would appear that the value of sewage as a fertilizer could be greatly increased by removing the grease, in addition to which the grease itself would have a value.

Concerning the experiments made by Manchester in gasifying sludge, he states that 80,000 cubic feet of gas having a calorific value of 112 B. T. U.'s was obtained from a material with a moisture content of 50 to 55 per cent., and in addition the equivalent of 61 pounds of ammonium sulphate per dried ton of material when dealing with sludge containing 1.46 per cent. nitrogen. The only difficulty consisted in thoroughly cleaning the fire when using a material containing 40 per cent. ash. Considering these difficulties, Mr. Grossmann estimates that a plant would cost about five times as much as an ordinary gas producing plant of equal capacity, and that the preparing of the sludge for burning would cost \$10 for an amount equivalent in gas product to a ton of coal, which would cost \$2.10. He therefore can see no advantage in this method of disposal from a financial point of view. In his opinion the most probable solution is the removal of the grease from the liquid sludge, and evaporation of the settled sludge by heat carried to a sufficiently high temperature to sterilize it and render it safe for use as a fertilizer under any conditions.

### GARBAGE TRUCKS IN ATLANTA

THE city of Atlanta, Ga., has for several months been using an auto truck for collecting garbage, and the chief inspector of the Sanitary Department, John Jentzen, informs us that it has not been out of service a single working day during that time, and that repairs during the seven months have been confined to two fan belts and one radiator hose, the total cost of which was \$3.30. It is possi-



ATLANTA GARBAGE TRUCK.

ble that the repair charges might have been heavier had it not been that an expert auto mechanic is employed to drive the machine. This truck, which is shown in the accompanying photograph, is a White gasoline 5-ton machine. It dumps from the rear by means of a side crank.

Concerning the capacity and efficiency of the truck as compared with dump carts, which had been used for many years by the city, Mr. Jentzen states that "This one truck does the work of 19 carts, which made one load each every morning on the route now followed by the truck and of four regular carts making six to seven loads each during the day. We have recently added two more of these trucks to our equipment, and it is my wish and intention to supplant the great majority of our 152 carts and 25 wagons with auto trucks, as I regard the latter as a more economical and efficient vehicle for handling garbage and rubbish, and except in unpaved, inaccessible sections of the city it is much preferable to either the cart or the wagon."

### WATER PURIFICATION AT TRENTON

Use of Calcium Hypochlorite for Temporary Treatment until Mechanical Filters are Built—Description of Sterilization Plant

By HOWARD C. HOTTEL, City Chemist of Trenton, N. J.

As a result of investigations made by the New Jersey State Board of Health, the city of Trenton, on November 9, 1911, started to purify its drinking water supply, raw Delaware River water, by the use of calcium hypochlorite.

Previous analysis of the water had shown that there was more or less constant pollution, liable to increase under certain weather conditions, and at the time that the plant was ready to start operation there was a typhoid epidemic in progress at Trenton.

The chemical purchased when tested was found to have 35 per cent. available chlorine and treatment was begun with a strength of about 0.4 to the million of available chlorine. This was found to be insufficient and on November 28 the dose was raised to 0.8 and has since then varied from 0.8 to 1.0 part per million, with a daily pumpage of about 20,000,000 gallons. In commercial terms this means that from 20 to 25 pounds of calcium hypochlorite are being added to every million gallons of water that is being pumped.

After the chemical had been increased the intestinal bacteria began to disappear, as shown by tests made by the State Board of Health. Inasmuch as the pipe area is rather large it took some time before the tap water gave negative tests for *B. coli*.

There has been considerable complaint from the taxpayers, who claim that the chemical gives a slight taste to the water. In fact, some would seem to prefer taking chances with typhoid rather than purification by treatment with calcium hypochlorite. The treatment, however, will probably continue until a permanent purification plant is established. Plans are already being drawn for the erection of a mechanical filtration plant, with the expectation of having the same completed within a year.

Shortly after the hypochlorite treatment was begun the typhoid dropped abruptly and a few statistics may prove interesting. During the month of November, 1911, there were 82 cases of typhoid reported, and during December 49. For the first three months of 1912 there has been a total of only 15 cases; in 1911 for the same three months there were 52; in 1910, 47.

During 1909 Jersey City with a population of over 200,000 had 23 deaths from typhoid fever, while Trenton with a population of less than 100,000 had 33 deaths from the same disease.

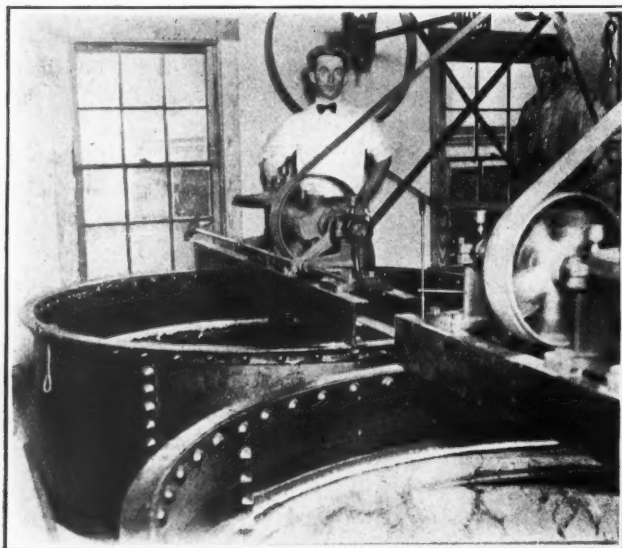
The official records for the past nine years show that Mercer County, which takes in the city of Trenton, has

for seven out of the nine years had the highest death rate in typhoid fever of any county in the State of New Jersey.

For the last five years the number of cases reported for Trenton has averaged over 250 yearly.

Such figures are, to say the least, suggestive of the efficiency of the hypochlorite treatment.

The sterilization plant for the purification of the water by the use of calcium hypochlorite was erected at a cost of \$4,500. It is contained in a two-story frame building, the lower floor of which is divided into two rooms, a ma-



SOLUTION TANKS—DISSOLVING TANKS AT THE RIGHT.

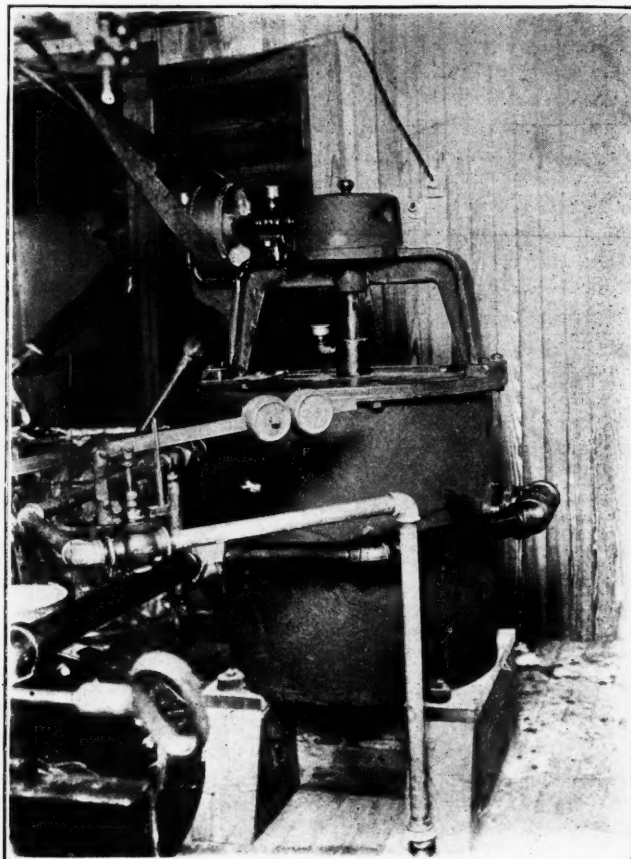
chinery room and a chemical storage room, the second floor comprising the operating room and office.

The ground floor of the building is of concrete and the operating floor of wood. The machinery and apparatus consist of two chemical dissolving tanks, two chemical solution tanks, one orifice tank and one receiving tank, the last-named tank being connected by a supply pipe to a grid, located in the sluice gate manhole in the intake, at a point just before the intake enters the pump well at the main pumping station.

The chemical dissolving tanks are of cast iron, two feet in diameter and two feet high. There are flanged connections for water-supply, discharge and drain piping, together with a hinged steel plate cover for each tank. The stirring and mixing apparatus, which is required to get the chemical into as complete a solution as possible, consists of a yoke casting secured to the top of the tank and having bronze lined bearings for both vertical and horizontal shafts, and a stirring rake of cast iron. Inasmuch as the chemical has a powerful corrosive action all of the bearings are bronze lined and the gears are covered with cast iron hoods.

The chemical solution tanks are eight feet in height and six feet in diameter. They are constructed of  $\frac{3}{8}$  in. steel plate with the bottoms of flanged steel heads  $\frac{3}{8}$  in. thick, turned for single riveting to the tank shell. The vertical seam of the shell is single riveted. These tanks are also supplied with a stirring device which consists of a rotary paddle agitator with vertical and horizontal steel shafts. The stirring apparatus is operated by means of belts, driven from shafting by a 2 h.p. electric motor.

The orifice tank is of cast iron porcelain lined. It is two feet in length, 8 inches wide and one foot in depth. On the inside of the tank, mounted in a cast iron bronze cage, is a hard-rubber plate with knife edge annular orifice, 3 in. long. The orifice is provided with a hard-rubber gate, rotated by means of a spindle, which in turn is operated by a worm-gear and worm. The worm-gear and



ONE OF THE DISSOLVING TANKS—SOLUTION TANKS AT LEFT FOREGROUND.

spindle are of bronze; the spindle is enclosed in a rubber tube and the latter is provided with a hard-rubber shield, thus preventing sediment from lodging on the orifice plate. Graduated index plates and pointers, of bronze, permit direct reading in setting the orifice for the thousandth part of its length. The flow of solution into the orifice tank is regulated by a float inlet valve and hard-rubber float.

The receiving tank is of the same size and material as the orifice tank. It is connected at the bottom with a 2-in. discharge pipe leading to the intake. The discharge pipe connects with a 3-in. header in the sluice-gate manhole. The header is 12 feet long and has six 1-in. discharge tubes, evenly spaced, and extending two feet into the flowing stream.

After leaving the dissolving tank the chemical passes to the solution tank, where it is diluted to a 2 per cent. solution. From here it flows into the orifice tank, and the orifice controls the rate (in gallons per minute) at which the solution is added to the raw water.

The plant is under the direct supervision of the chief engineer of the pumping station and, as it is necessary to have someone in constant attendance, it requires the services of three men working on eight-hour shifts. These employes prepare the solutions, adjust the volume of flow of these to that of the raw water and are in general charge of the sterilization plant while on duty.

#### BITUMINOUS CONCRETE REPLACES ASPHALT

In 1911 the city of San Antonio, Tex., found it necessary to resurface some asphalt paving laid about ten years previous, which had worn out, and instead of replacing it with asphalt it removed all of the old asphalt surface and re-covered the concrete foundation with bituminous concrete composed of broken stone, sand and bitumen, prepared at the city asphalt plant. This reconstruction was used over an area of 39,675 square yards.



### COST OF FILTERING

From a paper by R. Winthrop Pratt before the Cleveland Engineering Society.

MECHANICAL filters were first used principally by paper manufacturers, who required a clear water. Their use as a means of hygienically purifying the water was not generally begun until within the last ten or twelve years. The efficiency of the principles of mechanical filtration for municipal supplies was perhaps first proven during experimental tests at Louisville and Cincinnati, in 1897 and 1898. These cities are representative of a large class in the middle west, which has to use a clay-bearing water, and one that cannot be purified bacterially or even clarified by the slow sand system. The development of mechanical filtration to its present state of efficiency has been necessary to meet the demands of such cities.

The cost of installing filter plants may range from \$10,000 to \$40,000 or even \$50,000 per 1,000,000 gallons capacity. This unit cost varies with the size of the plant, the character of the water to be treated, the expense necessary to connect with the existing water system, and other local conditions. For example, the cost of installing the raw water pumps would be much less in places along the Great Lakes than it would be on the Ohio river, where the water level fluctuates 50 or 60 feet.

Studies by the Ohio State Board of Health, of 11 filter plants in Ohio, namely, those at

	Cost per 1,000,000 gals.
Cincinnati .....	\$49,830
Dennison .....	26,000
Elyria .....	10,000
Geneva .....	13,000
Lorain .....	12,000
Marietta .....	10,000
Rocky River .....	14,000
Upper Sandusky .....	15,000
Vermillion .....	8,000
Warren .....	13,000
Youngstown .....	13,000

have shown the average cost per 1,000,000 gallons capacity to be about \$17,000. Excluding the Cincinnati plant, however, which cost \$49,830 per 1,000,000 gallons capacity, the average cost of the remaining ten is only \$13,000 per 1,000,000 gallons capacity. The average cost per capita (based on ultimate capacity of plant), excluding Cincinnati, was found to be about \$1.50.

Slow sand filters are in general more costly to build, but cheaper to operate than mechanical filters. This statement is made with the assumption, of course, that the slow sand filters are installed only where the water is sufficiently clear to enable them to be operated with reasonable periods of service between cleanings.

Operating costs vary greatly with the quality of the raw water and the character of the treatment. Lake waters drawn from points removed from shore are cheapest to treat; while muddy river waters are most expensive.

Special treatment to remove color or odor add to the cost; and water softening may increase it two or three times. Under ordinary conditions filtered water may be obtained at a cost of \$10 per 1,000,000 gallons, including interest and depreciation charges. The figure will vary from \$5 to \$20.

With slow sand filters the principal operating cost is the labor and maintenance of equipment used for washing the sand. With mechanical filtration, the cost of chemicals and of labor, which are about equal, constitute the largest items.

In Ohio it was found that the operating costs, excluding interest charges, ranged from \$2.55 per 1,000,000 gallons at Elyria to \$12.10 at Warren, with Youngstown second highest at \$10.67. This great difference in cost is largely due to the superior quality of Lake Erie water taken from a point fairly remote from pollution over that of the turbid and polluted Mahoning river.

In considering the cost of maintaining a filter plant, attention should be directed to the comparatively small in-

crease in the cost of supplying filtered water over that of supplying unfiltered water. This increase is rarely more than 25 or 30 per cent., and frequently only 10 or 15 per cent. In any case, the increase should not amount to more than 50 cents to \$2 per person per year—a small price to pay for enjoying pure water and all of its benefits.

### NON-UNIFORMITY IN PAVING BRICK

INSPECTOR J. A. McCABE, who has charge of the testing of paving brick in connection with his other work, in a report made in March to Commissioner of Public Works J. J. Haarer, of Detroit, Mich., discussed tests and investigations made by him this year on paving block. The tests began on February 16 and consisted of standard rattler tests, transverse breaking tests and crushing tests. The object of these was to determine the relative value for paving of the various samples submitted.

In several instances a very wide variation was found between the rattler tests, and in other cases between the individual blocks used in the tests. In some instances this amounted to about 14 per cent.

Following these tests Mr. McCabe visited the plants of those bidding on paving brick for this year and reports that he found the absence of method for insuring a uniform product. "Several of the plants use shales of varying silica and alumina contents, which carry with it usually a variation in alkalies. Under the manufacturing method used proper means are not used to thoroughly mix the varying shales into a uniform compound, and it follows that often as the column of clay issues from the die and is cut into required sizes one block may have a very streaky mixture in it. This condition is clearly brought out in the rattler through the lack of a proper degree of vitrification in that part of the block which has the relatively high silica content."

Because of the fact that this variation causes uneven wear and pot-holes in the pavement Mr. McCabe recommends (what is already the practice in many cities) that the city or department fix a range of permissible variation rather than simply specifying a maximum average loss of the individual bricks.

As an illustration of the differences between the shales used in a single plant the following analyses were submitted, taken from records of a plant in operation:

Top shale before mixing:	Per Cent.
Silica .....	65.07
Alumina .....	18.61
Iron Oxide .....	5.40
Cal. Oxide .....	.45
Magnesium Oxide .....	1.02
Loss on ignition .....	5.41
Bottom shale before mixing:	
Alumina .....	19.80
Silica .....	58.44
Iron Oxide .....	7.09
Cal. Oxide .....	.77
Magnesium .....	2.5
Loss on ignition .....	7.81
After mixing, first sample:	
Silica .....	59.05
Alumina .....	19.16
Iron Oxide .....	6.75
Cal. Oxide .....	.72
Magnesium Oxide .....	.96
Loss on ignition .....	7.27
After mixing, second sample:	
Silica .....	58.04
Alumina .....	20.94
Iron Oxide .....	6.36
Cal. Oxide .....	.77
Magnesium Oxide .....	1.94
Loss on ignition .....	7.61

In addition to this cause of variation in the brick, Mr. McCabe stated that in rattler tests at the various plants a variation of about 7 per cent. was observed between blocks at the top and those at the bottom of the kilns.

If there are many instances of such variations in abrasion as stated in Mr. McCabe's report, there would seem

to be a necessity for the adoption by the manufacturers of some method of securing greater uniformity, or else a sorting out of the brick according to their abrasion resistance so that those grouped together in any part of a pavement should be uniform in this respect.

### SEWER PIPE FOR KANSAS CITY

LAST October the upper house of the Common Council of Kansas City, Mo., appointed a Public Improvement Committee of the Council to investigate and report upon the advisability of using cement or concrete pipe for the sewers of that city. This committee invited the Board of Public Works to unite with them in hearing evidence and arguments in the matter and also requested various interested parties to attend their meetings, and the manufacturers of cement sewer pipe and the various cement companies located in Kansas City and also the manufacturers of vitrified clay pipe to present arguments for their respective products. This committee has recently reported to Council. It states that its investigation covered a period of weeks, that more than 2,000 pages of testimony were taken and the fullest opportunity was afforded to all to be heard. Not only representatives of interested parties but many of the leading sanitary engineers of the United States were heard from either in person or by letter.

Among the engineers was Geo. W. Fuller, of New York City, who had been consulting engineer of Kansas City under the previous administration, and he advised the use of salt glazed pipe, even if the cost of the same exceeded by as much as 10 per cent. the full contract price for cement pipe. The former city engineer, James L. Darnell, also recommended vitrified pipe for all sanitary sewers of sizes which are manufactured of this material. A committee appointed by the master plumbers reported that in their judgment, based on personal observations of the destructive and disintegrating effect of sewage, vitrified pipe should be the material used in the sewers of Kansas City.

On the other hand, testimony was introduced tending to show that sewer pipe constructed of concrete, under proper specifications and with adequate inspection, would prove satisfactory. Professor Erasmus Haworth, of Kansas University; John Donnelly, a former city engineer of Kansas City; A. J. Hammond, ex-city engineer of South Bend, Ind., and J. P. Shearer, a member of the Board of Public Works of Milwaukee, testified that cement or concrete pipe, composed of proper material and properly made, cured and inspected would be a suitable material for Kansas City sewers. The present city engineer, L. R. Ashe, had prepared specifications admitting cement and concrete pipe in competition with clay pipe under very rigid specifications which required careful inspection of the cement, sand, etc., at the plant where the pipe was made and also of the manufacture and curing of the pipe, as well as a laboratory inspection.

The committee reported three conclusions as follows:

"First: That approved sanitary engineering requires that the best commercial product should be used in sanitary sewers, for the protection of health and life of the citizens of this community.

"Second: That the best material to be used in the sewers of Kansas City is vitrified salt glazed pipe. That it is the most sanitary, durable and impervious; possesses the greatest strength and permanency, and presents the greatest resistance to deterioration and destruction of all the commercial products for sewer construction now on the market.

"Third: That bids for finished sewers, based on specifications including both vitrified pipe and cement pipe, that have been submitted during the past few months, show that on an average the cost of the finished cement pipe sewer is greater than the finished vitrified pipe sewer."

### CENSUS REPORT ON STREET CLEANING

A PRELIMINARY statement of the street cleaning service in cities with over 30,000 population for the year 1909 has been issued by Director Durand, of the Bureau of the Census, Department of Commerce and Labor. The statistics were prepared under the direction of LeGrand Powers, chief statistician for agriculture in the Census Bureau, and are subject to revision.

Street cleaning operations were reported by each of the 158 cities covered by the report and in each city there was a certain area that was subject to a regular cleaning at least once a week. The largest number of square yards subject to regular cleaning are reported by New York, N. Y., 30,203,317; Philadelphia, Pa., 16,698,182; Buffalo, N. Y., 7,184,563; Baltimore, Md., 7,080,450; Detroit, Mich., 6,584,377; Pittsburgh, Pa., 6,259,500; St. Louis, Mo., 6,050,204, and Washington, D. C., 3,589,297. Cities with over 300,000 population which had the smallest areas subject to regular cleaning were, New Orleans, La., 420,420 square yards, and Chicago, Ill., 1,022,660 square yards. In Chicago the cleaning done by the city is confined to the business section; in other sections a large amount of cleaning is done through associations of property owners organized for the purpose.

Of the total 178,277,091 square yards of streets subject to regular cleaning 39.9 per cent. were swept by hand, 36.3 per cent. by machine, 17.5 per cent. by both hand and machine, and 6.3 per cent. by flushing. But some of the areas swept were also subject to occasional flushing. The most extensive flushing of streets where that was the only method of cleaning reported was reported by Detroit, Louisville and Cleveland. The largest areas both swept and flushed were reported by St. Louis, Kansas City, Mo., Cincinnati and Cleveland.

Significant changes are noted between 1909 and 1907 in the methods employed in street cleaning. The area swept by hand was greater than that swept by machine in 1909, but from 1907 to 1909 the area swept by hand was increased by only 5,738,092 square yards, while that swept by machine increased by 17,954,305 square yards. The number of men employed per 10,000 square yards subject to regular cleaning was less in 1909 than in 1907, this change reflecting the increase in machine cleaning in which fewer men are required for a given area than in hand sweeping.

The cost of street cleaning in cities arranged according to population groups in 1909 is shown in the following statement:

Population group	Cost of street cleaning, 1909—	
	Per 1,000 population	Per 1,000,000 square yards regularly cleaned
Over 300,000 .....	\$527.29	\$885.22
100,000 to 300,000.....	448.84	708.42
50,000 to 100,000.....	404.58	581.01
30,000 to 50,000.....	280.11	472.06
		Per 1,000,000 square yards of cleaning done
		\$554.24
		307.29
		279.21
		264.64

### SANITARY WORKS IN URUGUAY

A LAW has recently been promulgated in Uruguay providing for establishing sewerage and water works in all cities of that country of 5,000 population or more, in five of which they are to be started at once. In these cities the water and sewerage service will be obligatory, and the law prescribes the minimum of water to be used—2½ gallons per capita per day, the price of which is to be 15 centesimos per 1,000 liters (58.7 cents per 1,000 gallons). The sewerage service is to be free. Provision is made for temporary outlays of money from national funds toward erecting sanitary works, the State to be reimbursed by receiving the net proceeds of the services so long as necessary. Provision is made for an annual water tax and sewerage tax of 50 cents per lineal front meter (16 cents per front foot).



# Municipal Journal

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Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

APRIL 18, 1912.

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### Census Statistics Concerning Cities

In this issue we print a few figures concerning street cleaning in the one hundred and fifty-eight largest cities of the country, which will undoubtedly be of interest to a number of officials in almost every city, and should find in every city of the United States at least a few to appreciate their value. These figures were collected by the Census Bureau in 1910, together with many others concerning street paving, sewerage and other city functions and public services. A similar summary of those concerning sewerage will be given in our issue of May 2.

Although these figures are rather late in appearing (they have been given out more promptly, however, than in previous years, we believe) they will be appreciated by city officials and students of municipal matters as being the only ones available which embrace all the cities of a given range of population. Unfortunately these sum-

maries give very few of the details which were collected by the bureau, an illustration of the scope of which may be found in the special census report for 1907 (published in 1910) entitled "Statistics of Cities Having a Population of over 30,000." And it is still more unfortunate that such details are, we fear, not likely to be available for some time to come, if ever.

The reason for this is apparently the lack of appreciation by Congress of the desirability of publishing them. The Census Bureau has been compelled by lack of funds to confine itself for the present to the alternative—undignified for a national bureau—of sending out to the press a few carbon copies of these brief summaries and relying upon these private agencies for giving publicity to statistics of great public interest, collected at public expense. But until Congress makes an appropriation for tabulating and publishing these the bureau can do nothing further. The amount required for this is probably not greater than that which Congress has appropriated this year for one or two unnecessary public buildings in cities of less than one thousand population, which are of vastly less general concern than these census figures. The United States is behind most European countries in the extent and thoroughness of statistics collected, and it lowers it in the scale of civilization for so rich a country to so fail to appreciate this as to refuse to spend the comparatively small sum necessary to publish those already collected.

### Accuracy of Meters

ALTHOUGH the confidence of the public generally in meters is increasing somewhat from year to year, there is still a belief in the minds of many of them that meters of all kinds occasionally register several times as much water, gas or electricity as is consumed within their premises. In New York the consumer has the right to request the testing of any meter which he considers to be inaccurate, and the results of these tests are made public. During the month of March the Bureau of Gas and Electricity tested 34,978 gas meters and 120 electric meters, all of the latter and 421 of the former being tested upon complaint. Of the gas meters complained of 45.4 per cent. were found somewhat fast, 10.5 per cent. somewhat slow, and 44.1 per cent. within the limits allowed by law, namely, between 2 per cent. fast and 2 per cent. slow. Of the electric meters, 89.2 per cent. were found to be within the limits of accuracy allowed by law, namely, between 4 per cent. fast and 4 per cent. slow; 5 per cent. were found fast and 5.8 per cent. slow. This Bureau does not test water meters, but we believe that in most cities where any ordinary care is taken of these they would be found fully as accurate as the electric meters tested above, and that those which were slow would be found much more numerous than those which were fast, unless possibly in the case of new meters. It would appear from the above that gas meters are the principal offenders from the point of view of the consumer. It must be remembered that the figures given refer to only those meters which were believed by the consumers to be running fast, and that in a test of all meters in service those registering to the disadvantage of the consumer would probably comprise a much smaller percentage of the whole.

### Park Fireplace for Picnickers

In order to prevent brush and grass fires, which are prevalent in California during hot weather, very strict regulations are enforced in the Los Angeles parks against building camp fires. But in order that picnickers in the larger parks may have hot coffee or warm food with their lunch, the park commissioners have provided fireplaces, solidly built of rough stones or cobbles and cement. These are provided with a metal grill, on which coffee pots or any other utensils may be set, or steaks can be broiled.



FIREPLACE FOR PICNICKERS.

The stoves are large enough to provide cooking space for a number at a time, and a six-foot chimney carries the smoke away from their faces. The stoves serve another purpose in providing a ready method of clearing the parks of accumulated rubbish. Much of it is used by picnickers for their fires, and the park caretakers readily dispose of the fallen twigs and leaves and the Sunday's accumulation of newspapers by burning them, thus saving the expense of hauling them away.

#### HOISTING PLATFORM BRIDGING STREET

In the construction of the new rapid transit subways through Broadway, New York, the open cut system, by which most of the earlier subways were built, is not permitted, but tunnel work is required. In excavating this subway tunnel the timber method is to be employed. That is, the earth is excavated on the face of the work and the roof and walls of the tunnel braced up by timbers. In carrying out this work, obstruction of the street must be reduced to a minimum, as this is one of the busiest traffic streets in the city. The illustration shows the means employed by the Underpinning and Foundation Company, of New York, for handling the excavated material in conformity with the specifications, for the design and construction of which Jules Breuchaud, engineer of the com-

pany, is responsible. The platform or bridge is supported on six I-beams, 24 inches high and 66 feet long. The ends of these beams are supported by timber structures at the curbline, in the sidewalk area. The platform is 20 feet wide. Two I-beams, side by side, are placed at each edge of the bridge and two beams are placed between them at equal intervals. These are boxed in with wood sheathing, and the woodwork is painted in an ornamental but simple and appropriate way, and the whole appearance of the structure is not unpleasing.

At the point where this platform is built (Broadway, between Prince and Houston streets), the construction track of the tunnel will be about 25 feet below the surface of the street, and the platform is about 17 feet above the surface. The hoisting equipment consists of two outfits—one working on one side of the street and one on the other. It consists of two American Hoist & Derrick Co.'s 20-horsepower hoists, capable of lifting 56 tons. Both are operated by electricity, so that smoke, dirt and noise are eliminated as much as possible. Two stiff-leg derricks, mounted on bull wheels, with ropes, buckets, etc., complete the equipment. An arc light on each side indicates the intention of carrying on work at night.

The method of operation is simple. Buckets of dirt are lifted from the excavation through a housed-in opening in the sidewalk area, the housing being an extension of the casing which encloses the timber trestle supporting each end of the bridge. A slight turn of the bull wheel brings the bucket over a bin at the end of the bridge. Each bin holds about 40 cubic yards, and is provided with two chutes, so that the process of loading trucks driven alongside will be rapid. The storage capacity seems ample to insure a load of material for each truck as soon as it arrives, in spite of slight delays incidental to such work.

The roadway here is about 45 feet wide and contains two street railway tracks, over which cars pass every minute or two. This leaves about 13 feet available roadway on each side, between curb and passing cars, for wheel traffic. The conditions are exacting, but it is difficult to see how a method could be devised which would be less objectionable. The effort at ornamental treatment is, we believe, a new idea in this city.



HOISTING PLATFORM SPANNING BROADWAY, NEW YORK, FOR RAISING MATERIAL EXCAVATED FROM SUBWAY



## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

## ROADS AND PAVEMENTS

## Pavement 21 Years Old to Be Replaced

Los Angeles, Cal.—One of the oldest asphalt pavements of the city is to be torn up and a new one laid in its place on Figueroa street, between Pico and Washington. This pavement was laid in 1891 and is costing more to keep it patched up than it would to lay a new one. The board of public works will recommend to the council that proceedings be instituted to lay a new pavement.

## DuPont Halts Work on Road

Wilmington, Del.—That T. Coleman duPont is earnest in his intentions to suspend operations on his State-long boulevard, at least for the present, because of opposition that has developed, is evident, especially in Sussex county, where active work was in progress. Not only have the 300 men employed on the road in Sussex county been discharged, but duPont has closed his headquarters in Georgetown, where he had located his engineers, surveyors and clerks. Forty-five mule teams, wagons, carts, scrapers and other road building equipment have been removed to his country home, The Moors, near Cambridge, Md. Other property has been stored and everything in the way of road construction is at a standstill.

## Constructing Shell Roads in Florida

Tampa, Fla.—The Edwards Construction Company, of Tampa, has been active recently in the construction of shell roads throughout this section, among other road building having completed three and one-half miles of solid shell road between Cortez and Bradentown. This is one of the finest pieces of road in that section, built of solid shell, 15 inches deep, at a cost of about \$3,000 per mile. Among other road building by the company is that of a one-mile section in the Sulphur Springs subdivision, another section of one-half mile in Bay City near Ballast Point, and two miles for the Seminole Development Company in Seminole Heights.

## County Road Mileage Approaches Thousand

Richmond, Ind.—The first compilation of the number of miles of road and the number of bridges in Wayne county has been completed by County Auditor Bowman. The statistics were gathered for use in his office and for the benefit of the public. The total number of miles of road in Wayne county is 949.25. There are 397 bridges, 946 culverts, 134 concrete arches and 881 sewers across highways. One of the noticeable features of the compilation of the county auditor is that all the streams in Franklin township are bridged, and that fully 92 per cent. of the fords in Wayne county are bridged. Interest also attaches to the fact that there are only 32 miles of unimproved road in the county.

## Paving Gives Way Under Big Truck

Council Bluffs, Ia.—A small section of paving on Broadway, near Fourteenth street, gave way under the pressure of a heavy load of freight on a big automobile truck and workmen were engaged to repair the break. The pavement seemed to have been undermined by a leak in the water pipe that runs beneath the spot, and as the ground had sunk away under the influence of the water there was nothing left to support the pavement except the concrete foundation immediately beneath it. The water service pipe leading from the Broadway main to the south side of the street at that point gave trouble some time ago, having frozen up during the extreme cold weather and the bursted pipe permitted the water to escape. Unable to reach the trouble by digging inside the property line, workmen had turned off the water by digging to the juncture of the main and the service pipe in the middle of the street. The truck had a load, it is said, weighing about 7,500 pounds. This weight proved too heavy for the unsupported pavement and a section of the brick and concrete gave way, permitting the wheel of the truck to sink into the hole, perhaps a foot in depth.

## Report Is Made on State Roads

St. Paul Minn.—During the year 1911, according to reports made to the State highway engineer, the following road construction for which State aid was given was completed: Graded earth roads, 237 miles; gravel roads, 124 miles; sand-clay roads, 7½ miles; macadam, 3 miles. In addition to this there were 150,000 lineal feet of ditching, 1,074 lineal feet of concrete culverts, and 4,743 lineal feet of corrugated metal culverts, and 205 acres of land were grubbed and cleared for roads. At present 1,072 State roads have been designated, with a total mileage of 12,003 miles. Not all of this work has been done and not all of it will be done in 1912, as the sum available for building State highways at the disposal of various counties is inadequate for the work. Beltrami county leads the list with a total of 409 miles designated for State highways.

## Kansas Cities Must Pay Share of Highway Improvements

Topeka, Kan.—Cities must help pay for the improvements of the country roads in the county surrounding them. The supreme court has denied a writ of mandamus against the county treasurer of Lyon county asked for by the city of Emporia to compel the county to pay to the city the money collected for road purposes as taxes on city property. Lyon county decided to spend \$35,000 this year on good roads, and levied a tax to raise the money under the law enacted by the 1911 legislature. The property in the city of Emporia was taxed \$7,300 for good roads purposes. The city thought that this money ought to be used in improving its streets leading to the roads which the county would improve, and the city brought a suit in the supreme court that this money should be given to the city to be used in street improvement. The supreme court denied the application on the ground that good roads in the country were as important to the city as good streets, and that the city property should bear its share with country property in improving the roads up to the city limits. The entire sum of \$35,000 will be used in improving country roads in Lyon county, and the city must have a separate tax to improve its streets.

## Plan Uses for State's Road Money

Baltimore, Md.—O. E. Weller, chairman, and several of the members of the State Roads Commission have been in conference with Governor Goldsborough, going over the loan bill for \$3,170,000 before the Governor attaches his signature to the measure. In this bill are included separate appropriations for Baltimore city. All the road loans together, with a maintenance charge of 1 per cent. on the tax rate, cost the taxpayers of Maryland 9½ cents of the 31 now levied to meet the expense of the State government. Included in this must be the special tax of 1 cent on the tax rate, which, with the license money collected from automobiles, is devoted specially to the purpose of maintenance. Returns from automobile licenses will, it is estimated, net \$200,000, while an additional \$95,000 will be derived from the 1-cent levy, making a total of \$295,000 for road upkeep. Because of the first cost of roads it is impossible to build them rapidly out of the usual revenues of the State. Hence a loan must be floated. Under the constitution the sinking fund must be so arranged that the principal of each loan will be redeemed at the expiration of 15 years. Interest must be paid during that period. Those familiar with the finances of the State estimate that every \$1,000,000 adds 1 cent to the State tax rate for the redemption fund and the interest charges. Out of the 1908 loan \$1,200,000 is said to remain unexpended. It is understood, however, that contracts have been awarded that will consume this balance. Expenditures under this loan were limited so that not more than \$1,000,000 could be consumed during any one year. Limitations of this kind are not provided in the 1912 loan. The commission can, if it sees fit, expend the whole amount as soon as the contracts for the work are arranged and the work completed.

### Building Good Roads

Marshall, Tex.—Residents living on the "Scottsville loop," as the two connected roads running to that town are called, have been assisting the county in maintaining the roads lately with results that are little short of marvelous. The county's dirt roads have been pretty badly cut up as a result of the continued winter rains. Lately there has been some advocacy of the split-log drag on the roads, the suggestion including the idea that those living along the different roads render a little assistance to the limited county forces by hauling the drags over the roads themselves occasionally. The people on the Scottsville loop have done so and automobilists who have been out that way report the roads in as fine condition as any in the city. The drags were used immediately after one of the hardest rains of the winter, with the result stated. The work was wholly done by the residents along these roads under the supervision of the road overseer.

### Savannah's Mayor Favors Asphalt Blocks

Lexington, Ky.—Mayor J. E. Cassidy has received a letter from Mayor George W. Tiedeman, of Savannah, Ga., in which he strongly recommends the use of asphalt blocks for street paving. J. W. Porter, of Lexington, knew that this form of paving was widely used in Savannah and told Mayor Cassidy that the officials there could furnish information on the subject. Mayor Cassidy wrote to Mayor Tiedeman and received his answer. Mayor Tiedeman said that asphalt blocks are used almost exclusively in his city and that they consider them much better than either sheet asphalt or vitrified brick paving. They are easy to replace, and after being torn up to repair underground pipes, etc., and faulty blocks may be readily replaced. The method of laying used in Savannah, where the natural soil is a fine sand, is to grade and roll the ground and lay the blocks without any concrete foundation.

## SEWERAGE AND SANITATION

### City Must Screen Its Own Market

Columbus, Ga.—The city authorities of Columbus find themselves in a dilemma over the city market. Under a screening ordinance, which becomes effective May 1, all places where meats or vegetables are kept must be screened and to comply with its own ordinance the city must screen its public market. The irony of the case is that the lowest bid yet received for screening the building is \$700, which is considerably more than the city receives for the rent of the market.

### Sewer Work Resumed

Vincennes, Ind.—Work on the sewer extension on South Fourth street has been resumed by contractors Stewart, Sheets & Co., but work on the trench progressed slowly because of caveins and mud. The trench is being sunk through made dirt, a gas line being on one side and water line being on the other. The contractors state this Fourth street work is experimental and there will be no rush until after the extension is put down. The contractor will lay three-foot length tile as specified by the engineers.

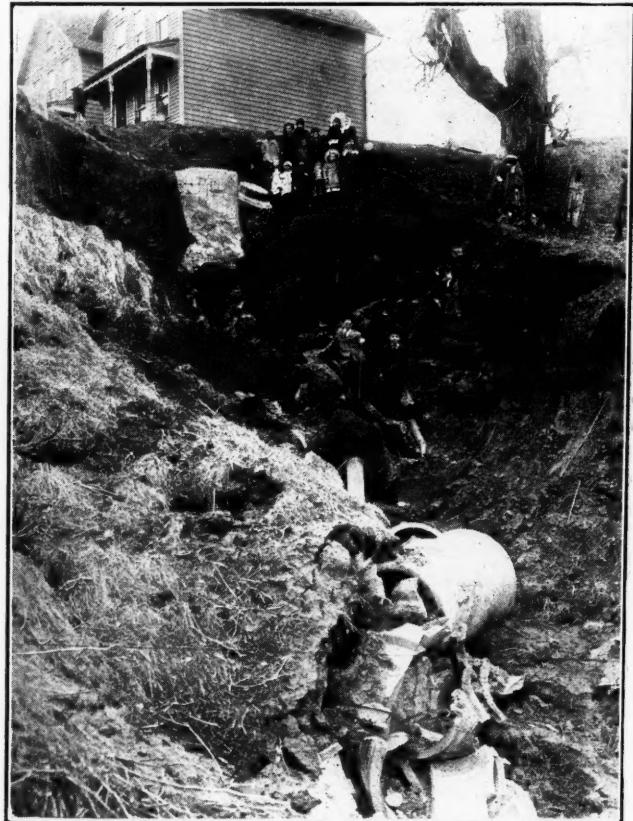
### Offers Pay for City Sewage

Denver, Col.—The Burlington Ditch Reservoir and Land Company has made a proposition to the city to purchase the entire output of sewage from the East Denver sanitary sewer which now opens into the Burlington ditch owned by that company. The company agrees to convey the sewage to a point beyond the city limits, and at the place of outlet to install a measuring device, approved by the city, which will be used in computing the flow of water from the sewer. For this water the concern will pay the city a sum equal to 5 per cent. of \$3,000, multiplied by the average annual discharge in second feet. The agreement is to take effect January 1, 1913. It is stated by the company that there is danger to the health of the city in the further pollution of the Platte river with sewage, and that if the contents of this sewer are taken away by the Burlington ditch it will relieve the river to a great extent. All matters of sewage disposal come under the supervision of the health department of the city and a contract such as is outlined would have to be signed and approved by the health commissioner. The proposition is now being considered by that department.

### An Expensive Sewer Washout

Schenectady, N. Y.—Breaks in a 36-inch tile storm sewer and an 8-inch cast iron sanitary sewer recently cut a gully for a distance of 250 feet from the top of the hill down to a creek, in some places 30 feet deep and 40 feet wide.

The ground first began to wash away from under and



Courtesy Schenectady Union-Star.

WASHOUT OF SANITARY AND STORM SEWERS.

around the pipes early in the winter, every little soft spell of weather making things worse. On March 16 the crash came. It was early in the day that a rumble was heard, followed by a shaking of the hill, and then a muffled roar. The residents in the eleven two-story frame houses along Craig street thought there was an earthquake, but those who ran to the street and reached the brow of the hill saw that the sewers had gone. The storm sewer filled then to its capacity with water, added to the destroying element when it broke, and for a time a veritable Niagara poured over the hill and into the creek.

### Contractors Strike Six-Foot Vein of Coal

Scranton, Pa.—Contractors Jones and Markwick, who are driving the Tenth sewer district tunnel in East Scranton, have made a lucky strike which will net them far more than the contract price for the work. They have cut into a six-foot vein of pure coal, which runs in the same direction the sewer tunnel does for about 400 feet. This sewer is being driven as a tunnel 70 feet beneath the surface for a distance of 700 feet. It is estimated that there are about 1,000 tons of pure coal in the seam, which will cost absolutely nothing to mine.

### Sanitation Lectures for Atlanta Children

Atlanta, Ga.—Under the auspices of the sanitation committee of the Chamber of commerce, which is headed by Charles J. Haden, the Atlanta branch of the National Mothers' Congress will inaugurate a course of lectures on hygiene and sanitation in the Atlanta public schools. Preparations have already been made for the opening of this course, and the lectures will begin within the next few days. The ladies have secured a commission from the school authorities and everything is ready for the opening address. The lectures will be given by experts of Atlanta and other cities and will be illustrated by stereopticon slides.



## WATER SUPPLY

### Rivetted Steel Water Main Breaks

Schenectady, N. Y.—A serious break occurred last week in the 36-inch rivetted steel main of the Schenectady water system near Rotterdam. The city's water supply was limited to the amount that could come through the other supply main—24 inches in diameter, reducing the pressure about 10 pounds below the normal. The break occurred at a point where a 30-foot fill had been constructed by the Delaware & Hudson Railroad. Repairs were effected by the use of an oxy-acetylene apparatus.

### Starting Work on New Dam Near Dallas

Dallas, Tex.—The accompanying picture shows the cofferdam for the concrete wall on the Elm Fork of Trinity river. This dam is to be 110 feet long between wing walls,



Courtesy Dallas Morning News.

COFFERDAM FOR CARROLLTON CONCRETE WALL.

with wing walls of 30 feet each and land walls of 100 feet. It will rise 18 feet above low water, and is intended to conserve 475,000,000 gallons of water. The site is 24 miles from Dallas. The city owns about 50 acres of land about it. The dam is to cost \$24,000.

### Will Guard Against Pollution

Duluth, Minn.—An investigation of all conditions which now, or may in the future, affect the purity of the water supply of the city of Duluth will be conducted under the direction of the board of water and light commissioners. Frequent analyses of water taken from the well at the Lakewood pumping station are made by the University of Wisconsin. In commenting on the last analysis, Dean H. L. Russell said it was the best yet obtained, but speaking generally he said that the analysis showed from time to time the presence of gas-producing organisms in the water. While the gas organisms in themselves are not disease-producing, they are indicative of the presence in the water of alien matter, not normal in the unpolluted water of Lake Superior.

### Water Supply in Excellent Condition

Rahway, N. J.—The report of Consulting Sanitary Engineer Earle B. Phelps showed that the water supply of the city was in excellent condition and that no deleterious matter was being passed from the pumping station. The report of Consulting Sanitary Engineer Earle B. Phelps is as follows: "The river water has shown an average of nearly 12,000 bacteria per cubic centimeter, reaching a maximum of 64,000 on the 29th. The B. coli have been unusually prevalent, averaging 97 per cubic centimeter. The average bacteria in the filtered water has been 78 and the maximum 170, which point was reached twice during the month. The B. coli have been uniformly absent. The efficiency of the filters as measured by the removal of the bacteria has been 99.35 per cent., and as measured by the B. coli results, 100 per cent. In the report of Engineer Gage the efficiency of the new pumping apparatus was clearly shown by the fact that a saving of 32,000 pounds of coal had been made during the past month, in which time there was an increase in pumpage of 16,268,697 gallons.

### Muddy Water Clogs Filters

Sandusky, O.—The city filtration plant has failed for the second time in a month to meet demands. Its output was so small, owing to the fact that the raw water received from the bay was unusually muddy, that the filtration process was abandoned and an untreated supply turned into the service mains.

### Improvements in Windsor Water Works

Windsor, Canada.—Adoption of the chlorine system of treating city water for bacteria has been definitely decided on by the Windsor Water Board. The resolution for the installation of the new system was made by Commissioner Joseph Martin, the member of the board who opposed the plan when it was proposed earlier in the year and succeeded in blocking it for a time. The cost of the system will be about \$1,000, it is estimated. Its adoption was decided on rather as a precaution than as a necessity. Tests of Windsor water which have been made at intervals during the last 12 months have shown it to be free from harmful bacteria and it is probable these tests will continue. To provide for increased consumption of water the board closed a contract with a Toronto firm for the installation of another 8,000,000-gallon pump at the water works station. The new pump will be put in commission within four months. It will cost \$18,500. A by-law confirming the latest reduction in water rates was passed by the board in preparation for the collection of rates this month. The new schedule provides for an average cut of about 10 per cent. in rates.

## STREET LIGHTING AND POWER

### Luminous Arcs Very Satisfactory

Schenectady, N. Y.—As soon as the necessary part of the second magnetite luminous arc arrives the Schenectady Illuminating Company, which has put in the two ornamental posts to show the merchants of the city and the committee of the Board of Trade and Press Club the value of the new lights, will turn on the second lamp. The new lamp between Clinton and Lafayette streets on State street has attracted much attention, many hundreds of persons stopping along the curb to watch the effect produced. It could plainly be seen that the light was more than double the power of the ordinary arc lamp, and in addition to this the light was spread more evenly. The entire front of the Foster building clear to the roof was lighted and this is an effect never before seen.

### Company Demonstrates Lighting System

Newburgh, N. Y.—The picture illustrates a block on Broadway, furnished with six Corinthian poles, each bearing five 80-candlepower lights installed by the Ornamental Lighting Pole Company, of New York City. This system of lighting was furnished as an experiment. Plans had



Courtesy Newburgh News.

EXPERIMENTAL STREET LIGHTING.

been made by the electric light company to equip the lamps with 150 and 200 watt lamps, which would increase the light from 50 to 100 per cent., but the councilmen and others were rather of the opinion that there was light enough. The ornamental effect was secured easily enough, and the question of having these lights now seems to depend largely on the cost. The experts of the electric light company are figuring on the cost, and the estimate will be ready for the councilmen at their next meeting.

### Ninety-Cent Gas for Des Moines

Des Moines, Ia.—Judge Sloan, master in chancery, to whom the matter of the rates for gas in Des Moines was referred by Judge McPherson, has decided that Des Moines is entitled to gas at 90 cents. The city had by ordinance ordered the reduction in price and the gas company had moved to enjoin the city. The master had had the matter under consideration for months and decided that the city is right. The present rate is \$1 per thousand feet if paid within 15 days after bill is issued. The case, which is very similar to the Chicago gas case, probably will be finally settled by Judge McPherson of the Federal Court. The company has 30 days in which to file a bill of exceptions, but the evidence is said to be so overwhelmingly against the company that it probably will not continue the case.

### May Use Waste Water to Develop Power

Amsterdam, N. Y.—At the last meeting of the Common Council the first recommendation from Mayor Dealey for this year was received. It was very brief and dealt with the question of utilizing the power which is now being wasted at the end of the conduit line just above the distributing reservoir for emergency lights for the city. At the present time the city is paying the Edison Light & Power Company about \$18,000 for lighting the city. The Mayor says that he is informed by competent authority that there is sufficient power which can be developed from the water works at a very moderate cost to furnish sufficient energy to light the entire city. He claims, according to the information received, that from 300 to 400 horsepower can be developed 24 hours a day, and that amount is sufficient to light the city as well as it is being lighted now.

### Want City to Assume Private Light System

South Bend, Ind.—In an effort to induce the city to take over the private electric street lighting system installed by merchants on Main, Michigan and other streets a petition is in circulation and will be presented to the proper city authorities in due time. The petition sets forth that the street lighting system should be uniform in character and that only a specified kind of street lighting post should be permitted. The petition is receiving the signatures of nearly every merchant who is now paying privately for electric lighting of the streets in question. In addition to this lighting system the city also maintains a lighting system consisting mainly of overhead lamps at street intersections, although a number of goose neck posts are in place on various corners and at other points on the streets. The petitioners believe the city's lighting system in the district under consideration should be eliminated and that private system should be taken over and maintained by the city. It is understood the Indiana Michigan Electric Company, which has the contract for lighting the city, which contract will not expire until January 1, 1915, is willing to cancel that part of its contract if the city will take over the private lighting system.

### Ornamental Lighting System Being Installed

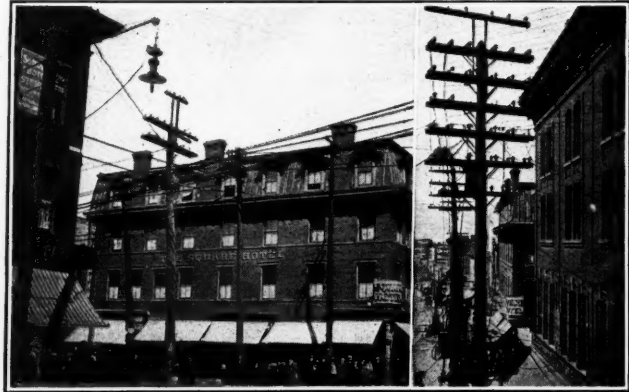
Burlington, Ia.—The cable which is to be used in installing the electrolier curb lights has arrived and has been distributed at the various corners of blocks where the lights are to be installed. This material, which is usually the last of the essential material to be ready, is here somewhat sooner than was anticipated, and it will now be but a short time until Jefferson street will be lighted in a proper manner and the appearance of the city will be improved 50 per cent. The posts are being manufactured at the Murray Iron Works foundry, and many of them are already made, while the men at the foundry are working on the rest of the lot. There are to be 44 of these posts, and they will be equally divided among all the blocks which are to have curb lights. Secretary Egan states that he thinks the lighting of the streets will be at its best by the close of the current month, and that little difficulty will be experienced in getting busy at once. The cable which is to be used was made at Bayonne, N. J., and as that place turns out vast amounts of cable it is generally hard to get an order filled as soon as the local one. The cable has to be put underground, the standards erected and connections made, but it is not thought that this will require a great deal of time or work. It is the intention to put a large force of men at work, so the work will be accomplished as rapidly as possible.

### Erie to Get Power from Niagara Falls

Erie, Pa.—That Erie is to get electrical power direct from Niagara Falls is practically assured now. The commissioners of Harbortownship realize the importance of the project and promptly granted the franchise as asked for by the Erie & Suburban Railway Company to bring six 12,000 voltage wires through that township from the International Power Company at the falls.

### Would Clear Streets of Wires

Yonkers, N. Y.—The Chamber of Commerce has appointed a special committee to see what can be done toward



Courtesy Yonkers Herald.

OVERHEAD WIRES AT YONKERS.

putting the wires which encumber the streets under ground. The illustrations show the objectionable conditions now existing in the busiest section of the town.

### Somerville to Test Lamps

Somerville, Mass.—Broadway will be illuminated by the Edison magnetite lamps, which are expected to have twice the illuminating power of the old style arc lights. The new lights cost \$98 a year each, and are served by underground conduits. The displaced lights cost \$84 and had overhead wires. To mount the new lights the poles were heightened five feet. The mayor and representatives of the city government will ride over the route of the new lights and if they find them satisfactory will proceed with plans to illuminate all the principal thoroughfares with the new lights. It is planned to put all wires underground.

### Clovis Takes Over Electrical Wiring

Clovis, N. M.—Another step was taken toward the municipal ownership of all public utilities and public service in Clovis when the city council, by resolution, took over the electrical wiring of the city. The various electrical wiring supplies of the city are being invoiced and turned over to the city, and from this date the city fathers propose to do the electrical wiring for the public at actual cost of material and labor. An electrician has been employed who will have charge of this department. The city will not handle the fixtures, at least for the present, but these will be handled by the local dealers. It is stated by members of the council that this arrangement will mean a saving of from one-third to one-half of the former cost of electrical wiring. There are more than 200 residences now on the line current of the city's plant which are not wired and connected for current.

### Wish to Sell Electric Power in City

Syracuse, N. Y.—Application is to be made by the Syracuse Utilities Company to the Public Service Commission for permission to produce and sell electric power. The plant of the Municipal Heating Company, which went into the hands of a receiver, will be used. Steam heat and electric power will be sold, using four and one-half miles of mains which the old company had. The gross revenue, it is thought, will be from \$160,000 to \$200,000.

### Municipal Plant Shows Big Profit

Jamestown, N. Y.—Jamestown's municipal lighting plant has been a source of profit to the city during the past twelve months. The report of the city auditor for the year shows that the total operating expenses of the municipal plant, including salaries, materials, supplies, interest on bonds and 5 per cent. for depreciation, was \$37,970.78, and the total income from operation \$52,755.39, leaving a net balance to the good of \$14,784.61.



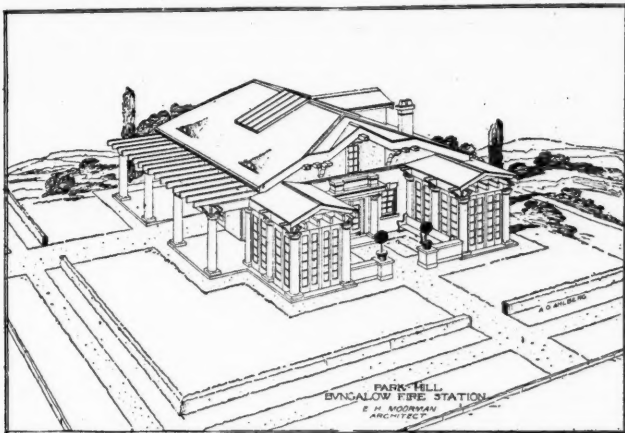
## FIRE AND POLICE

### Report of Fire Chief

Chattanooga, Tenn.—Members of the local fire department were called upon to answer 17 alarms during the month of March, according to the report of Chief Toomey, submitted to Commissioner Betterton. The department kept loss on both buildings and contents down to \$3,924, while the total insurance on damaged buildings amounted to \$556,850. The fires were credited to the following causes: Electric iron, 1; unknown, 2; heat from range, 1; defective motor, 1; ignition of film, 1; spark from chimney, 2; flues burning out, 3; gasoline lights, 1; heat from brick kiln, 2; burning grass, 1; sparks from overheated furnace, 1.

### Denver's Attractive Bungalow Fire Station

Denver, Col.—A bungalow fire station in keeping with the architecture of the locality will be built by the city in Park Hill. Plans have been drawn, the foundation started, and the fire and police board will soon award the contract for the brick work. Several cities have fire stations in residence districts to conform to the general style of the neighborhood, but this is believed to be the first instance where a building was constructed on the bungalow order.



ARTISTIC FIRE STATION TO BE ERECTED.

Park Hill, Park Hill Heights and the various additions out that way are filled with beautiful bungalow homes, and from a distance this fire station will appear like a residence. The idea of such a structure was suggested about a year ago by Fire Commissioner D. A. Barton, when a fire station for Park Hill was first advocated. He later laid the matter before Architect E. H. Moorman, who designed a building on plans outlined by him, which were a few weeks ago accepted by the fire and police board. The patio idea of the bungalow is utilized as nearly as possible, and a complete success is shown by the convenience and the exterior beauty of the building. When the building is completed a hose company and a combination chemical engine and truck will be installed there. The apparatus room will be one large room 20 by 35 feet with an open height of 24 feet from floor to roof, and will be lighted by a large skylight visible from all parts of the building. The floor will be part tile and part cement with a tile wainscoting 5 feet high all around the room. This room will be accessible from all parts of the building. On the ground floor will be also the dormitory, where the firemen will have their sleeping quarters, locker room, containing lockers and shower baths, a visitors' room, captain's room, hose room, work room and drying room. One of the most satisfactory results of a station of this kind is its economical construction. The usual station covering this space is, as a rule, more expensive and not nearly so artistic in appearance as this one. The impression given is of a modern bungalow residence costing anywhere from \$7,000 to \$10,000. This will make Denver's engine houses number 18, there being 17 now, nearly all of which are thoroughly modern, though not built on the style of residences.

### Has New Machine for Testing City's Fire Hose

El Paso, Tex.—The city fire department has now a new machine for testing hose and retouching couplings. By its use hose can be tested to any pressure up to 400 pounds per square inch. New couplings can be put on hose in much faster time and much tighter than by the old method of doing this by hand. It is in operation at the Central fire station.

### Woman Gets Police Badge

Plainfield, N. J.—Mrs. Stephen H. Van Hoesen, wife of a New York customs broker, has been vested with police powers by Mayor Moy. Mrs. Van Hoesen, who is the agent of the local S. P. C. A., took the oath, and a special policeman's badge was pinned on her coat by the mayor. She is the first woman in this section of the State to be made a special policeman. The new badge, she believes, will allow her to do more effective work.

### Fire Alarms More, but Losses Less

Cleveland, O.—Fire department records made public show a rapid increase in the number of fire alarms and a decrease in losses by fire. If the fire alarms are received at the present rate for the balance of the year there will be a total of 3,000 calls for 1912, as against 2,463 for last year. The year 1911 showed the highest total that the department has received in any one year in the history of the city. Fire losses for 1911, according to records of Assistant Secretary Knapp, of the fire department, were \$644,917.67. Of this amount, \$349,537.73 is the loss on buildings and \$295,379.94 the loss on contents. The sum of \$547,000 was paid by insurance companies during the year. The total loss in 1910 was \$696,076.48, and insurance companies paid out \$604,000 in that year. In 1909 the loss by fire was \$1,288,952.07. In that year the number of destructive fires in the business section was unusually large. Up to the time the report was issued the department had a record of 739 fire alarms for 1912.

### Police Whistles for Women Are Favored

Minneapolis, Minn.—Little silver police whistles, monogrammed and attached to silver chains, may take the place of the chain purse, the powderbook or the silver-encased mirror as a result of the statement made by Michael Healey, chief of police, that he favored women carrying whistles for their protection. As the result of the recent attacks upon women, Alderman McInerney has promised to frame an ordinance authorizing all women to carry such whistles. The suggestion came from club women of the Fifth district of the Federation of Women's Clubs.

### Signs Declared a Fire Menace

Portland, Me.—It is understood that a concentrated effort will be made on the part of a number of Portland's citizens to have an ordinance passed by the City Government requiring all of the large signs that have been erected on the tops of many of the buildings about the city to be removed and to prevent the further erection of signs of that character. So much adverse comment has been heard relative to them that it is probable that a petition will be offered at the next meeting of the city fathers, asking that the ordinance be passed without delay. It was learned that a number of the largest signs had been erected without permission of the building inspection. Chief Flaherty was asked regarding the sign question and he was most emphatic in denouncing them. He said: "I will do everything possible to have them removed. They are a great menace to buildings upon which they have been placed and also to the adjacent buildings. They are of such tremendous size that they would hamper the working of the fire department in case of a fire. I not only am in favor of the removal of the big, ungainly signs, but I am in favor of having the ordinance relative to small swinging signs enforced to the letter. The streets are full of the small signs and are a source of great inconvenience when it is necessary to erect ladders to fight fires. There are a number of signs that are all right. I refer to the electric signs which are firmly secured and are safe. I believe there would be no harm in passing an ordinance covering signs of that class. The smaller wooden signs are dangerous in many ways. Believing the big signs not only dangerous but a detriment to property in case of fire, I shall make the same recommendations that I do when I find other conditions are detrimental to property and the best interests of fire protection."

### AUTO APPARATUS NOTES

#### Squad Wagons and Tractors Figure Prominently in Philadelphia Plans for Improved Fire Protection—Operating Costs at Roanoke—Apparatus Driven at Test Through Two Feet of Mud.

Brockton, Mass.—The Brockton Fire Department has just received a combination chemical and hose motor wagon from the Pope-Hartford people, similar to that which the same concern is building for the Trenton department.

Springfield, Mass.—On March 25, 1911, the \$10,000 electric ladder truck made by the Couple-Gear Company was put in commission at the Court Street Station. In the past year this piece of apparatus has been in constant service, answering 118 alarms. The cost to the city for its use has been less than \$60. The old truck drawn by three horses was maintained at an annual expense of about \$1,000, the largest part of which was spent on the horses. The greatest item of expense on the electric truck is the replacing of the batteries.

Moundsville, W. Va.—The new fire truck, combined with a hose reel and chemical engine, ordered some time ago by the city council from the Winton Automobile Co., of Cleveland, O., has arrived in the city. An expert from the factory was on hand, and together with the members of the council and the mayor, gave a demonstration on the streets about the city. The truck, when being run out First street, attained a speed of 45 miles an hour. The truck is painted a maroon color, with the inscription on each side, "Central Station, Moundsville."

Perth Amboy, N. J.—The contract for a 75-foot American automatic aerial hook and ladder truck of the latest and most improved type has been executed. The builders, the American La France Fire Engine Company, of Elmira, N. Y., are about to start work to fulfill the contract and city officials declare the truck should be ready for use about July 1. According to the specifications the raising device will consist of combination coil springs enclosed in steel tubes permanently mounted on a turntable, gear segments forming a shoe for the aerial butt ladder and revolving with the same on a main supporting shaft. The device will be so constructed as to permit raising and lowering of the ladder, without a jar, by means of an air cylinder from which air is to escape through a small opening while springs force the ladder upward. The air cushions and power of supporting springs are to effectually prevent the ladder from falling at any time. The aerial ladder is to be lowered by compressing coil raising springs by means of crank wheels. All manipulation, raising and lowering main ladder, extending and lowering fly ladder and revolving the turntable is to be performed without operators leaving the turntable platform. The turntable platform is to be located on the forward end of the truck and will revolve with as little resistance as possible on ball bearings. The truck is to be equipped with fancy hardwood running boards under which is to be constructed a platform for carrying a life net. It will also be equipped with fancy tool platforms, tool box and wire basket. The driver's and tillerman's seats are conveniently located and are equipped with brightly polished brass railing. The steering gear is to be of the latest approved type, non-reversible and self-locking. The rear axle is to be of the stationary type fastened to half elliptic springs. The apparatus will also be equipped with internal expanding ring brake, will have a 62-inch track and will be painted in fine coach colors, chiefly English vermilion. The lettering on it will be "P. F. A. D., No. 1." The ladder equipment will consist of a 45-foot rapid hoist with rope and pulley and a 45-foot extension ladder, and a 30, 28, 24, 20 and 16-foot single ladder and 12-foot and 16-foot roof ladders.

Schenectady, N. Y.—The department of public safety has placed an order with the American Locomotive Company for an Alco gasoline tractor to be used to draw Truck No. 1 of the fire department. The tractor will cost \$3,285 complete, the specifications including a three-year guarantee, all equipment and an extra electric headlight system, the latter practically a gift from the company to the city. The tractor will be built especially to meet the local requirements and will be based upon the plan of the company's three and one-half ton commercial truck. The contract calls for delivery in three months, but the company will try to have the machine ready in 60 days.

Willows, Cal.—The frame annex to the Hotel Idaho was destroyed last week by fire of unknown origin, causing a loss of \$3,000, fully covered by insurance. The new automobile fire engine was rushed to the scene, but the only hydrant was within 20 feet of the burning building, and after the engine had been connected with the hydrant with a short length of hose it was found the heat was so great the firemen could not work near the engine and the machine was in danger from the flames. When the paint began to burn on the machine the firemen hastily backed it away from the hydrant, tearing out the hose couplings and making it impossible to connect with any other hydrant.

Lorain, O.—Lorain's two pieces of motor fire apparatus have passed successfully the first official test. Both machines, the aerial truck and combination chemical and hose wagon, carrying full crews and complete fire fighting equipment, were sent to the southern end of the Broadway pavement, then north through the city to an imaginary "fire" in the four-story Lorain hardware building at the corner of Fifth street and Broadway. Following the "fire" test the hose wagon outfit was loaded with firemen and city officials, 12 men in all, and sent through a mud test on three unpaved streets. If any one of the 14 who witnessed the mud test had doubted the ability of the machine to negotiate muddy roads his doubts were shattered by the performance of the hose wagon in plowing through between 18 inches and 2 feet of slushy mud over three of the worst streets in the city. Safety Director Ault, Mayor Pape, Fire Chief Hatt and other city officials who witnessed the gruelling tests of both machines expressed complete satisfaction with the new apparatus. The mud test of the motor hose wagon was convincingly successful. Loaded with 12 men and carrying 1,500 feet of fire hose, in addition to the regular equipment, the hose wagon was driven from West Erie avenue to Second street over unpaved Lake place, thence along Second street to Brownell avenue; south on Brownell avenue to West Erie avenue over old Maple street (now the extension of Fifth street) to the Fifth street pavement. In all four long blocks of the worst unpaved streets in the city were covered in the mud test. In places the wheels of the heavy truck sank into the road over the hubs, dragging the running boards in the mud. A speed of not less than 10 miles an hour was maintained throughout the test. Officials on board the truck declared that a team of horses hitched to a horse-drawn hose wagon would have been hopelessly mired in places through which the truck passed with ease.



Nott auto steam fire engine and Sampson hose wagon in a recent parade at Paterson, N. J., during the meeting of the New Jersey Fire Chiefs' Association.



Kalamazoo, Mich.—That Kalamazoo sustained a fire loss of \$301,059.97 in 1911 is shown by the annual report of Fire Chief Russell. This amount is \$204,074.53 in excess of that of 1910—an increase of over 200 per cent. There were 168 alarms in 1911, as against 230 in 1910. The total number of feet of hose laid in 1911 was 43,100; in 1910, 44,200; the number of miles traveled in 1911 in responding to alarms was 547; the number of hours spent at fires in 1911 was 6,442. Chief Russell called the attention of the council to the inadequate equipment of the fire department in the following communication: "The town has grown to such a size that the former methods do not avail in handling fires, as they are more destructive in character and often more than one breaks out at the same time, so our system must be changed to meet the situation. We not only must have powerful pumping engines, but must have means to get them to a fire without delay, and when horses have made a long run they cannot immediately repeat it in another direction and perhaps to a distant location. An estimate of the cost of a suitable steamer for our needs is about \$6,000, three horses and harness would cost \$900, and three men would be required to handle it, whose salaries would probably amount to \$2,520 annually, to which should be added the expense of keeping the horses, so the investment and expenses for the first year would amount to nearly \$10,000. An auto-combination apparatus would cost about \$5,500 and the three additional men \$2,520, which with supplies and repairs would call for about \$8,500 for the first year. If the aerial truck should be put into commission we would require three horses and harness costing \$900, and the salaries of four men would amount to \$3,360, in all \$4,260. We should have ten new fire alarm boxes in order to keep up the service to the proper standard."

Philadelphia, Pa.—A constructive plan for improving the fire protection service of the city has been worked out by Assistant Director of Public Works James Reed, Jr., who has been assisting Public Safety Director Porter in a thorough investigation into the condition of the fire department. The plan for improving the fire protection in this city falls into five classes in the order of their importance. First, the building and equipping of new stations to more thoroughly protect the territory; second, the purchase of modern motor-drawn fire apparatus; third, the conversion of the heavier type, such as large trucks and water towers, to the tractor-drawn type; fourth, the establishment of the flying squadron; fifth, the extension of high-pressure protection. As funds become available later it is proposed to buy two heavy trucks for the exclusive purpose of carrying high-pressure hose. These will be installed, one in the upper high-pressure district and one in the lower district. These trucks have a capacity of nearly 3,000 feet of 3½-inch high-pressure hose. The combination hose and chemical motor trucks will be of lighter type, with a little more speed, and will be used in stations where the high-pressure mains have not yet been laid. The conversion of the heavier type machines, such as the 17,000-pound water tower, into the tractor-drawn will be the first step for the better utilization of present equipment. A piece of apparatus of this size and weight cannot be hauled quickly by horses. It is proposed to equip this water tower with a four-wheel drive tractor, which will haul it at a speed of 18 miles an hour. It is also proposed to purchase in the immediate future a heavy ladder truck also of the tractor-drawn type. The fourth improvement in the fire protection of the city has to do with the flying squadron. Applied here, it is proposed to divide the city into districts, the size to be determined by the amount of territory the machine can cover efficiently. A long wheel base touring chassis, equipped with high-power motor and suitable body is installed in one of the fire stations located in the center of the district. The apparatus is manned by a district engineer, assistant engineer and crew of eight or ten men. These are picked men, skilled in handling fires in the early stages. On receipt of an alarm in the district the "flying squadron" proceeds to the scene of the fire at the highest speed. It arrives considerably in advance of other pieces of apparatus. An inspection of the fire is immediately made by the district engineer and his assistant. If it can

be extinguished by chemicals, these are on the machine and are used. If lives are in danger the inhabitants are carried out, the life net is spread, street lines roping off the crowds are laid out, the fireplugs to be used by the other apparatus are selected, and when the other apparatus arrives with the chief or assistant chief, the plan of attacking the fire is already made and reported to the superior officer.

Roanoke, Va.—Following is the report of the cost of operating the auto fire engines of the fire department for five months ending March 1: Company No. 4—Miles, 197.3; gallons gasoline, 167; quarts lubricating oil, 30. Company No. 5—Miles, 147.8; gallons gasoline, 130½; quarts lubricating oil, 20. Company No. 6—Miles, 87; gallons gasoline, 77½; quarts lubricating oil, 13. No. 4 company made one mile on 8.10 gallons gasoline. No. 4 company made 6½ miles on one quart of lubricating oil. No. 5 company made one mile on 9.10 gallons of gasoline. No. 5 company made 7½ miles on one quart of lubricating oil. No. 6 company made one mile on 9.10 gallons of gasoline. No. 6 company made 7 miles on one quart of lubricating oil. No. 4 company—167 gallons gasoline at 12 cents, \$20.04; 30 quarts lubricating oil, 11 cents, \$3.30; total, \$23.34. No. 5 company—130½ gallons gasoline, 12 cents, \$15.66; 20 quarts lubricating oil, 11 cents, \$2.20; total, \$17.86. No. 6 company—77½ gallons gasoline, 12 cents, \$9.30; 13 quarts lubricating oil, 11 cents, \$1.43; total, \$10.73. Gasoline and oil for five months, \$51.93; minor repairs for five months, \$34.40; total cost of three machines for five months, \$86.33. These machines take the place of six horses and would have cost \$15 per horse per month based upon the actual cost of the horse-drawn engines, or a total for five months of \$450. This represents a saving of \$363.67.

## GOVERNMENT AND FINANCE

### Mayor Lunn Talks About His Administration

Schenectady, N. Y.—Reviewing the work accomplished during the first three months of their administration, the Schenectady Socialist officials point with great satisfaction to the many innovations with which they credit themselves at the close of this brief period of their incumbency. Mayor George R. Lunn thought the most important innovation from a financial standpoint is the organization of the bureau for the centralization of purchases based upon a unit cost system. "By this system," said Mayor Lunn, "we have inaugurated a policy which will mean the saving of thousands of dollars annually to the city of Schenectady. As an illustration, we can mention articles which, in previous years, cost as high as \$90 that we have obtained in the open market for \$30. Articles costing 10 cents we purchase for 2 cents." Mayor Lunn added that it was the intention of the administration sometime in the future to hold a budget exhibit where a sample of all standard articles purchased by the city would be shown together with the price, the price previously paid and the total saving to the city. This exhibit will cover a multiplicity of articles used in the several departments, from hay and oats, purchased in car-load lots, to pencils and typewriter ribbons. The bureau for the centralization of purchases is in a division of the Department of Public Works. Arrangements are now under way for a further extension of the facilities of the bureau, so merchants may know at any time the amount expended for all goods purchased by the city, and may enter complaints with the city officials if they find that this amount is in excess of the price of similar articles sold by them. "The reclassification of the budget," said the Mayor, "places our Department of Finance on a par with that of any city in the country." He added that only one or two cities in the United States had attempted to make a similar classification. It is claimed that the expenditures for services and supplies according to the budget appropriation will be \$22,000 less than that of the previous administration, although the amount to be collected by taxes will be somewhat larger, because of the necessity to meet the accrued interest on bonds. "This reduction has been made notwithstanding the appropriation of funds for the establishing of the municipal bureau of ice, the municipal farm, the new hospital, the employment bureau, board of public welfare and the purchase of free text-books for the seventh and eighth grades of the public schools throughout the city."

### Radical Change to Be Made in Ohio Municipal Governments

Columbus, O.—After weeks of careful investigation and consideration the municipal government committee of the constitutional convention has decided it will be for the best interests of the municipalities of the State to make a complete change in the basic principles on which municipalities have operated for the past 60 years in the State. The report of the committee practically has been completed and will be submitted to the convention. For 60 years the municipalities have enjoyed only those powers specifically granted. It has been a government of "thou shalt not." The conclusion of the members of the committee in framing the new basic law on which cities will operate in the future is that municipalities should have and enjoy all such powers and privileges as are not specifically denied by the constitution. This changes the theory from "thou shalt not" to "thou mayest," and gives to the municipalities, as members of the committee believe, the full power to solve the problems of the present day and those of the days to come.

### City Decides on Commission Form

Battle Creek, Mich.—Despite opposition from within and without, the Charter Commission of Battle Creek has definitely decided to recommend the commission form of government for the city. It has decided, however, that Port Huron's revised charter is not suited to Battle Creek's needs, and it has been eliminated from consideration. Charles E. Thomas, an attorney and capitalist, is leading the fight in favor of retaining the present system of electing a Mayor and Council, but John W. Bailey, ex-Mayor and also a lawyer, as chairman of the revision commission, favors the new form, as do all the Republican commissioners.

### South Sioux City Votes to Be a City

Sioux City, Ia.—At an election in South Sioux City to ascertain the sentiment of the citizens as to a change from the village form of government to that of a city of the second class, the proposal carried 55 to 149. This could have been done, under the law, by the village trustees without any election, and it is now practically assured that the change will be made, although it may not take place for some months. It is up to the village trustees to say when the change shall be made.

## STREET CLEANING AND REFUSE DISPOSAL

### Will Flush Brick Pavement

Norwich, Conn.—Arrangements have been made for the flushing of the brick pavement instead of sweeping it each night. This work will be done by the public works committee, who have arranged with the water department to use the hydrants for this purpose. The flushing will be done each night and the merchants will be glad to have the change, inasmuch as the sweeping stirs up a thick dust to settle on the windows and walks and that gets into stores through transoms and under doors. With the reservoir practically full, it is considered there is sufficient water to take care of this work.

### Appoint April 30 as Clean-Up Day

Mishawaka, Ind.—Although not positive, April 30 will probably be the day for the yearly cleanup of private property and the city's streets, when the Street Cleaning Department will co-operate with the residents in the matter of carting away the rubbish collected, if such is placed at the curb in front of the property. As was the case in 1911, the committees appointed by the Woman's Club for service throughout the year to report unsanitary conditions in their wards will notify property owners of the annual clean-up day. The city administration will take the time that day for the thorough cleaning up of the city's streets, particularly those paved.

### Suggest Use of Trash Receptacles

New Orleans, La.—At a recent meeting of the committee of the Progressive Union on Public Health considerable time was devoted by the committee to the discussion of securing receptacles for paper and trash to be placed in the central part of the city. Commissioner Smith had submitted the matter, with a sample of a receptacle. It is made of galvanized iron with a top on hinges and slots at the ends for putting in paper, and is arranged so that the

paper would go into a sack, which could be lifted out for emptying. The discussion resulted in recommendations that might cheapen the cost of the receptacles. Those shown cost about \$5. It was suggested that the top, instead of being round, be sloping and extend out over the front to protect an aperture from rain, so that the receptacle would be open for receiving paper. This would make it easier to put paper in and cheapen the receptacle.

### City Cleans Streets After High Water

Augusta, Ga.—Parts of the city were flooded in the recent rising of the river and as soon as the water subsided a house-to-house inspection and cleaning of premises were commenced. It is a Herculean task to pump the water from the flooded cellars and basements of the city, but the work is being daily pushed with considerable speed. All cellars are being disinfected, and, as soon as emptied, are sprinkled with lime and oil. This oil is a refined by-product of crude petroleum, and is the best known for preventing mosquitoes and killing their eggs. The oil forms a heavy scum on the surface of the water, and it is impossible for this obnoxious insect to live in it. After the water is pumped from the cellars, all rubbish in them must be cleaned out and taken off the streets by city scavenger carts. This method has succeeded in doing away with accumulated rubbish that would not otherwise have been moved. This is one reason why the flood was beneficial in making the city more sanitary. One of the Board of Health inspectors said that in some of the negro dwellings in Augusta trash and unsanitary rubbish, the accumulation of years, had been cleaned and removed. If the freshet had not come, the inspectors claim, this rubbish might have remained in the houses for years to come; for they are not allowed to enter dwellings for inspection except on special orders. The Health Department has already received four carloads of lime, or 550 barrels, that have been distributed.

### Citizens Clean Up City

Carthage, Mo.—Clean-up work has been started. In each block over the city a woman has been appointed to have charge of that particular block, see the residents and have them rake their yards and gather the accumulation of rubbish together. The city will provide men and wagons to gather this collection of dirt and haul to the dumping grounds. Only such trash as cannot be burned is to be carted away. About half a dozen teams will be provided for transporting the rubbish away from the city limits. The Civic League intends having the men and wagons begin gathering the trash on the outer edges of the city and work gradually into the center of town, with the square as the objective point. The work of cleaning the city is to be pushed unceasingly, according to Mrs. L. E. Whitney, president of the Civic League, until it really is free from dirt. The wagons will call for the rubbish until it has all been taken outside of corporate limits.

## RAPID TRANSIT

### Obtain Five-Cent Fare

Los Angeles, Cal.—Residents of Eagle Rock valley, who have been conducting a campaign against the Los Angeles Street Railway corporation to obtain a five-cent fare, have won out. Effective April 1, the regular city five-cent fare will be charged to all territory this side of Verdugo road, leaving about four blocks between the end of the low-fare limit and the city boundary. The territory includes Glassell Park, Elliott place and Cypress Park.

### Chicago Cuts "Melon" with Street Railway

Chicago, Ill.—As its contract share of last year's profits of part of its street railway system, operated by the Chicago City Railway Company, the city of Chicago has been paid \$1,907,275. This is the largest payment yet made by the company. When the Chicago street railway system was reorganized under the franchise ordinance of February, 1907, the two new companies accepted the valuations given them by an appraisal made by city engineers. Upon these valuations, plus actual subsequent capital expenditures, the companies are allowed 5 per cent. out of net earnings. The balance remaining goes 55 per cent. to the city and 45 per cent. to the companies, out of which they pay fixed charges and dividends.



**Advocates Construction of Trolley Line in Park**

Pittsburgh, Pa.—President John M. Goehring, of Council, has introduced a resolution in that body proposing that the city construct a trolley line in Schenley Park, that the people may have easy access to the interior portions. He proposes that the city construct the line and that the Pittsburgh Railways Company furnish the cars. He told the other councilmen that the traction company was willing to furnish the cars and give transfers from lines passing the park entrance. The resolution provides that a special committee, consisting of the president of Council, the chairman of the Parks and Library Committee, and the chairman of the Public Service and Survey Committee consider the proposition. The director of the Department of Public Works is to make the survey and give an estimate of the cost of the undertaking.

Mr. Goehring pointed out that it was not necessary to have a high speed line, but one that would take the people into the park and save them covering the great distances on foot. Schenley Park is a huge tract, and to get to all parts of it means the walking of several miles. The race track is almost a mile in a direct line from the entrance. Here many events are held every summer and the proposed car line would greatly aid those who take an interest in the out-door sports held at the oval. The proposition is looked on with favor by those concerned.

**MISCELLANEOUS****Gardens for the Poor**

Spokane, Wash.—To enable the poor to aid themselves in securing a food supply, the Spokane city council has made arrangements for the free plowing of back yards and vacant lots for those who wish to raise vegetables and grain. Several hundred vacant lots will be donated by real estate dealers for the gardens.

**State Will Plant Trees Along Roads**

Rochester, N. Y.—During the summer the State will set out a large number of shade and ornamental trees along public highways, first in Niagara, Orleans, Erie, Monroe, Oneida, Ulster, Westchester, Suffolk, Albany and Chemung counties. Poplars will first be planted, about 100 feet apart on both sides of the road, to be followed next summer by red oaks planted between the poplars. The work in Monroe county will be done along the Scottsville road, leading southerly from Rochester to Scottsville, a distance of about 10 miles, connecting with the main road to Buffalo.

**City May Derive Revenue From Sale of Junk**

Pittsburgh, Pa.—Director Armstrong, of the Public Works Department, and Superintendent Finley, of the Bureau of Water, recently compiled a list of unused machinery at the Aspinwall filtration plant, "left-overs" from the work of installing the big plant, and which it is now found impossible to use. According to their figures the entire outfit originally cost about \$320,000, and it is figured that if a hard bargain is driven the pile of junk will bring \$20,000. While it is explained that the consequent net loss will be about \$300,000, council is asked to consider disposing of the material, which at present takes up a lot of room. There are 12 sand scrapers, which it is shown are useless because of the prohibitive cost of operating, the sand being restored by other methods at less cost, and a dozen hose reels. Then there is a rail system that interferes with the work and which it is recommended should be removed. In beds 1 to 46 are 1,600 tons of standard rails worth \$12 a ton; in beds 47 to 56, 800 tons of special grooved rails, at \$9 a ton. Two-thirds of the rail outfit should be removed, it is recommended. The total cost of installing the rail system was \$190,000, or a cost of \$127,000 for the number to be taken out. All this is summed up in the following table of original cost and the revenue that could be derived at the present day from selling the outfit: Cost—Twelve sand scrapers, \$87,000; six sand scrapers, \$53,640; twelve hose reels, \$49,644; rail system, \$127,000; total, \$317,284. Might sell at—Twelve sand scrapers at \$200, \$2,400; six restorers at \$150, \$900; twelve hose reels at \$25, \$300; rails at \$12 and \$9 per ton, less \$2,000 for removal, \$17,260; total, \$20,860. Net loss, \$296,424.

**LEGAL NEWS****A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities****Care of Streets—Snow and Ice**

Dupont vs. Village of Port Chester.—Port Chester village charter, requiring the trustees to remove obstructions from any cause on the public streets, sidewalks and crosswalks, and to compel persons to remove from sidewalks snow and ice, does not impose on the village the duty of keeping crosswalks free from snow and ice, the duty to remove snow and ice being imperative only when dangerous formations have been created; and, where there was no structural defect in a crosswalk, and its temporary condition, due to a snow-storm, was the same from curb to curb, and was the same as other crossings, it was not liable for injuries to a pedestrian slipping on the crosswalk, in the absence of anything to show dangerous formations.—Court of Appeals of New York, 97 N. E. R., 735.

**Sewer Assessments—Objections**

City of Chicago vs. Terwilliger.—Under Local Improvement Act, which provides that, if a variance between the estimate and the ordinance be shown in proceedings for a special assessment, it shall not affect the validity of the proceeding, unless the court shall deem it wilful or substantial, there is a substantial variance between an estimate for a 2-foot brick sewer and an ordinance providing for a 2½-foot brick sewer, affording valid ground for objection to a petition for the levy of a special assessment; the variance being so material that, in the absence of evidence to explain it, it may be regarded as a wilful variance, which is equivalent to an intentional variance, and a variance being equally substantial, whether the work included in the ordinance is more or less than that included in the estimate.—Supreme Court of Illinois, 97 N. E. R., 694.

**Eminent Domain—Contract Obligation**

City of Cincinnati, Plff. in Err., vs. Louisville & Nashville Railroad Co.—The obligations of a contract by which a river front strip at Cincinnati was dedicated to the public use were not impaired by the condemnation, conformably to Ohio Revised Statutes, of a right of way for an elevated railroad track across such strip, even assuming that there is to be read into the contract the then-existing law of eminent domain, including the provisions of article 2 of the ordinance of 1787 for the government of the Northwest territory, that "should the public exigencies make it necessary, for the common preservation, to take any person's property, or to demand his particular service, full compensation shall be made for the same."—United States Supreme Court, 32 S. C. R., 267.

**Liability of Officers—Collections**

City of Topeka vs. Stahl.—Where an officer seizes intoxicating liquors upon a warrant issued under a city ordinance authorizing their destruction upon certain conditions, and after surrendering them upon an order of delivery in replevin obtains a judgment for their value in default of their return, he holds such judgment for the benefit of the city, and upon its collection by him he becomes liable to the city for its amount, less any expenses he may have necessarily incurred in obtaining it.—Supreme Court of Kansas, 121 P. R., 910.

**Boundaries of Town—Ambiguous Statute**

People on Complaint of Beede vs. Town of Antioch.—That the officers of a town and the public for about 38 years gave an ambiguous statute, defining its boundaries, a certain construction, justified the court in resolving any doubt as to its meaning in favor of such construction.—Supreme Court of California, 121 P. R., 944.

**Closing Street—Damages—Persons Entitled To**

In re West 151st St. in City of New York.—Though a city may not physically close a street until compensation to abutting owners has been made, yet, for the purpose of determining the persons entitled to the award of damages, the street is deemed legally closed at the time the essential statutory steps have been taken, for then the right to damage accrues, and an owner of abutting property at that time is entitled to damages, notwithstanding a subsequent conveyance made subject to proceedings then pending or thereafter brought relative to the closing of streets.—New York Supreme Court, 133 N. Y. S., 894.

## NEWS OF THE SOCIETIES

### Lake Michigan Sanitary Association

The fifth annual meeting was held in Hammond, Ind., April 4. Several members of the Chicago Chamber of Commerce and city officials of Hammond, Gary, Whiting, East Chicago and Indiana Harbor were also present. The following were elected officers for the ensuing year: President, Mayor A. J. Horlick, Racine, Wis.; first vice-president, Dr. G. B. Young, Health Commissioner, Chicago; second vice-president, Dr. F. A. Tucker, president Indiana State Board of Health; secretary, M. R. Humphrey, Industrial Commissioner, Association of Commerce, Chicago.

The Calumet region must solve its own problem with reference to pure drinking water, drainage and sewage disposal, without relying much on the physical property of the Chicago sanitary district, but before anything can be attempted it will be necessary to establish an Indiana sanitary district. These were the dominant ideas of the meeting.

Frank N. Gavit, Senator of Whiting, who was one of the speakers, assured the association that he would make every effort at the next session of the Indiana Legislature to create a sanitary district, and asked the co-operation of the association.

The paper of great interest to the Calumet region was read by Professor R. L. Sackett, sanitary engineer of Purdue University. It was entitled "A Solution of the Calumet Region Problem?" It advocated the creation of a sanitary commission with full power to tax the sanitary district, which is to comprise all the territory drained by the Grand and Little Calumet Rivers and their tributaries.

John Watson Alvord, hydraulic and sanitary engineer, of Chicago, discussing Professor Sackett's paper, did not entirely coincide with him. Six years ago Mr. Alvord worked out a sewage disposal plan for the city of Gary. He said he came to the conclusion then that the sewage disposal problem was not a local one for Gary, but that a comprehensive system would have to be devised for the entire region.

Mr. Alvord said that the popular impression in Indiana is that the Calumet region could rely on the Chicago sanitary district to help dispose of the Indiana sewage, a theory which he held erroneous, for the reason that Chicago itself would have to tax the Sag Canal and the drainage canal to its utmost.

Dr. Fred A. Tucker, of Noblesville, president of the Indiana State Board of Health, said the ultimate tendency of the medical profession will be to prevent sickness rather than cure it. Dr. John N. Hurty, secretary of the Indiana State Board of Health, read an excellent paper on "A Big Business Proposition," in which he emphasized the need of hygiene as a commercial asset.

H. E. Barnard, chief chemist for the State Board of Health, urged the establishment of a sanitary district.

James O. Heyworth, president of the North Shore Sanitary Association, read a paper on "The North Shore Problem," and like others at the meeting deplored the lack of public interest in these most important matters.

### Michigan Health Officers' Association

At a meeting of the officers of the association, held in the office of the Detroit Health Board last week, a constitution and by-laws were formulated and a tentative programme for the meeting of the association in Ann Arbor in May was formulated.

The organization was formed in Ann Arbor in January. The officers elected at that session were: President, Dr. Guy L. Kiefer, Detroit; vice-presidents, Dr. T. S. Langlois, Wyandotte; Dr. T. M. Kuhn, Grand Rapids; Dr. Edward Goodwin, Bay City; Dr. A. F. Fisher, Hubbell; secretary, Dr. R. L. Dixon, Lansing.

The object of the organization as set forth in the constitution is: "The study of preventive medicine in all its phases; the dissemination of knowledge concerning the causes and prevention of contagious diseases and concerning preventive medicine in its various applications; the encouragement of methods for the prevention of contagious diseases and for the promotion of public health."

The programme for the May meeting as it is now planned is: "Shall Venereal Diseases Be Reported?" Dr. Kiefer. Discussion by Dr. Warthin, Ann Arbor.

"Medical Supervision of Schools," Dr. E. K. Herdman, Ann Arbor. Discussion by Dr. Kuhn, Grand Rapids.

"Prevention and Control of Typhoid Fever," Dr. C. C. Slemons, Grand Rapids. Discussion by Dr. W. H. Smith, St. Clair.

"Meat Inspection," Caroline Bartlett Crane, Kalamazoo. Discussion by Dr. A. H. Rockwell, Kalamazoo.

"Use and Importance of Public Health Laboratories," Dr. M. L. Holm, Lansing. Discussion by Dr. Fisher, Hubbell.

"Control of the Milk Supply," W. H. Price, Detroit. Discussion by Dr. G. L. Alger, Saginaw.

"Medical Fakers in Relation to Public Health," Dr. V. C. Vaughn, Ann Arbor. Discussion by Dr. E. T. Abrams, Hancock.

### Associated Health Authorities of Utah

About eighty-five health officers attended the convention at Salt Lake, April 4 and 5. The most important act of the convention was the unanimous passage of a resolution urging Congress to pass the Owen bill, organizing a national Board of Health. The following is the program carried out, after an opening address by President Dr. G. E. Hughes, Provo:

Thursday, 2 p. m., "The Duty of the State in the Prevention of Unnecessary Waste of Life," Dr. C. M. Clark, Provo; "A Broad Conception of the Duties of Health Officer," Dr. F. J. Woodbury, St. George; "Personal Effort in the Preservation of Health," Dr. O. E. Coleman, Castle Dale.

Friday, 10 a. m., "Rural Sanitation," Dr. William L. Rich, Garland; "The Prevention of Smallpox," Dr. E. M. Neher, Castle Dale; "The Relation of Flies to the Public Health," Dr. H. G. Merrill, Provo; "The Diagnosis and Prevention of Scarlet Fever," Dr. A. N. Hanson, Salt Lake City.

Friday, 2 p. m., "The Serious Effects of Adenoids and Diseased Tonsils," Dr. Fred Stauffer, Salt Lake City; "Quar-

antine and Disinfection," Dr. D. L. Barnard, Garfield; "Dental Inspection of School Children," Dr. Noyes, Provo; "Medical Inspection of School Children," L. E. Eggertsen, Provo, and "Public Health Conditions in Utah," Dr. T. B. Beatty, Salt Lake City.

An announcement by Dr. T. B. Beatty, secretary of the State Board of Health, that the board proposes to abolish quarantine on smallpox, after some discussion was unanimously indorsed. It was stated that the measure is one to induce greater use of vaccination as a means of stamping out smallpox. It was contended that only by vaccination can the disease be handled, that quarantine has proved unsuccessful, and for that reason it is to be abolished and the people provided with free means of protecting themselves against the disease through vaccination. Dr. F. J. Woodbury of St. George was elected president of the association and Dr. Warren Shepard of Beaver City was elected secretary to serve during the coming year.

### Tennessee Health Officers' Association

The second annual convention was held at Nashville, April 3-5. The following officers were elected: Dr. W. E. Hibbett, president, Nashville; Dr. J. F. Arnold, vice-president for East Tennessee, Washington County; Dr. C. T. Love, vice-president for West Tennessee, Crockett County; Dr. T. O. Bratton, vice-president for Middle Tennessee, Wilson County; Dr. John Steele, secretary and treasurer, Chattanooga.

The convention was called to order by President K. S. Howlett, Franklin. An address by Governor Hooper was read by his secretary, G. C. Taylor. He spoke of the right of the government to exercise oversight of the individual citizen to the end that his conduct and condition should not constitute a menace to the public health.

Among the topics discussed and papers presented were the following: "Sanitation and Inoculation for the Prevention of Typhoid Fever," paper by L. L. Lumsden, Richmond, Va.; "The Bacilli Carriers," by Dr. Wm. Litterer, Nashville; "Control of Typhoid Fever in Rural Districts," by Dr. A. W. Freeman, Richmond, Va.; "Relation of the County Health Officer to the State Department of Agriculture in Live Stock and in Sanitary Control Work," by Dr. George R. White, who emphasized the point that disease is liable to be contracted from lower animals by human beings; "The Prevalence and Prevention of Tuberculosis," by Dr. J. D. Strain, of the Nashville Anti-Tuberculosis League; "What to Do With a Tuberculous Prisoner," by Dr. J. H. McSwain, Paris; "Meat Inspection," by Dr. W. B. Lincoln, United States veterinary inspector, Nashville; "The Fly Nuisance," by Dr. John Steele, Chattanooga; "Municipal Water Supply," by Dr. Wm. Luther, city bacteriologist of Nashville; "Municipal Sanitation," by Dr. Max Goltman, Memphis; "Amoebae," by Dr. C. W. Stiles, Washington, D. C.; "Compulsory Sanitation," by Dr. F. B. Reagor, Shelbyville; "What a County Health Officer May Do for His County," by Dr. Wickliffe Rose, secretary Rockefeller Sanitary Commission; "Health Officers for Smaller Cities and Towns," by Dr. W. N. Lackey, Galatin; "Work of the Department of Food and Drugs and Hotel Inspection," by Dr. Lucius P. Brown.



**Michigan State Firemen's Association**

More than 400 fire chiefs are expected to be present at the annual convention, which will be held in Kalamazoo June 4, 5 and 6. The local committee is already sending out invitations and arranging the three days' programme.

Fire Chief Russell stated that indications point toward the biggest meeting in the history of the organization, both in number of delegates and exhibits. Comparatively little attention has been paid by the apparatus manufacturing concerns to State conventions in the past, but Chief Russell has already received the assurance of several big companies that they would place exhibits at the meeting here and give demonstrations of their respective products.

The committee in charge of the local preparations is composed of Chief Russell, Assistant Chief Welch and Captains Bowen, Carnes, Corwin, Ihrman, McKee, Ten Busschen and Waite. The convention and exhibit halls have not yet been selected. Fire Chief Delf, of Lansing, president of the association, is expected in Kalamazoo within a short time to confer with the local committee on the arrangement of the program.

**New York State Association of Fire Chiefs**

For the first time in its history the association will hold its yearly convention in Albany next June.

William W. Bridgeford, chief of the Albany Fire Department, has received from Henry R. Yates, chief of the Fire Department of Schenectady and secretary of the State association, a communication saying the directors will meet soon in Schenectady to arrange details.

It has been the custom to have the convention occupy one and one-half days. About sixty-five fire chiefs will be present, about fifteen commissioners of public safety and thirty representatives of the manufacturers of fire apparatus, making a total attendance of more than one hundred. The association intends to have on exhibition as many pieces of automobile fire apparatus as possible.

**Empire State Gas and Electric Association**

The fifth meeting for this season of the Empire State Gas and Electric Association will be held in Schenectady, N. Y., April 26, and it is expected that officials of lighting companies from all over the State to the number of at least a hundred will be in attendance. General Manager Henry W. Peck, of the Schenectady Illuminating Company, is chairman of the arrangement committee. There are two more meetings for this year, one in May and the last in June.

The meeting here will probably be held at the Mohawk Golf Club and there will be a morning and afternoon session, with a luncheon at the club at noon. The special subject that will be discussed at the meeting is "Accounting Methods." There will be no formal papers ready, but a general discussion on this subject entered into by all the members.

**Police Chiefs and City Marshals' Association of Texas**

Fort Worth, Tex.—The Executive Committee of the Police Chiefs and City Marshals' Association of Texas met recently in Fort Worth in the office of Police Chief Renfro and fixed the dates June 11, 12 and 13 for the next annual meeting of the association. The place selected by the convention last spring is San Angelo.

**PERSONALS**

ASHLEY, BURTON J., Chicago, Ill., has been elected park commissioner, Calumet Park district.

CHILD, STEPHEN, Boston, Mass., has been retained by the park commissioner of San Jose, Cal., to prepare plans for the city development of Alum Rock Park.

MESSANY, EDW. W., Kalamazoo, Mich., has been appointed superintendent of the city's lighting plant.

MIDDLEKAUFF, JOHN H., Hagerstown, Md., has been re-elected fire chief.

ROBINSON, WM. P., Denver, Col., has been elected president of the Denver Union Water Company, to succeed the late Thomas S. Hayden. Mr. Robinson has been connected with the water company for the last 24 years.

WATSON, HERMAN A., Kalamazoo, Mich., has been appointed superintendent of water works.

The following mayors have been elected:

**MICHIGAN.**

Adrian.—Dr. Artemus W. Chase.

Alma.—J. M. Montigel.

Albion.—George McCarty.

Alpena.—L. G. Dafee.

Bessemer.—Dr. Pinkerton.

Belding.—Elmer E. Fales.

Benton Harbor.—J. J. Miller.

Big Rapids.—W. D. Hopkinson.

Boyne City.—Wallace C. Bailey.

Corunna.—Howard Slocum.

Cadillac.—James Murphy.

Charlotte.—Horace Maynard.

Charlevoix.—Olef Nordrum.

Cheboygan.—John Noll.

Coldwater.—C. A. Conover.

Dowagiac.—E. D. Dickson.

Eaton Rapids.—Thomas B. True.

Escanaba.—Dr. W. A. Lemire.

Flint.—Charles Mott.

Gladstone.—George Perry.

Greenville.—Merton Smith.

Grand Rapids.—Geo. E. Ellis.

Grand Haven.—Dr. Charles W. Cotten.

Hillsdale.—Corvis M. Berre.

Hastings.—Charles H. Osborne.

Holland.—Nicomemus Busch.

Ishpeming.—Dr. G. G. Barnett.

Lapeer.—Rev. Father P. R. Dunigan.

Lansing.—J. G. Reutter.

Ludington.—Joseph Zeif.

Mason.—Arlington Bergman.

Marshall.—E. E. Sawdy.

Manistee.—W. P. Hall.

Mackinac Island.—Peter Earlv.

Muskegon.—Harry A. Rietdyk.

Menominee.—Frank Karteiser.

Midland.—William D. Gordon.

Mount Clemens.—Duncan Hubbard.

Monroe.—Fred C. Deinzer.

Niles.—C. R. Smith.

Onaway.—Charles Bohel.

Owosso.—George W. Clark.

Pontiac.—W. H. Osman.

Petowsky.—Homer Sly.

St. Clair.—John Schlinkert.

St. Johns.—R. G. Jeffries.

St. Joseph.—A. J. Wallace.

South Haven.—A. D. Moore.

St. Louis.—G. W. Giddings.

St. Ignace.—T. J. Furlong.

Standish.—Joseph Martin.

Stanton.—M. W. Stevenson.

Sault Ste. Marie.—Thomas J. Furlong.

Traverse City.—W. D. C. Germaine.

West Branch.—Edward McGowan.

Yale.—Dr. J. B. Stevens.

Ypsilanti.—Frank Norton.

**IOWA**

Avoca.—Caleb Smith.

Corning.—A. T. Wheeler.

Clarion.—P. H. Goslin.

Carroll.—S. H. Johnston.

Council Bluffs.—Thomas Maloney.

DeWitt.—L. F. Harrington.

Denison.—W. H. Laud.

Emmettsburg.—S. D. Byeckford.

Harlan.—W. F. Baughn.

Hawarden.—W. Walter Scott.

Jewell.—William Anderson.

Keokuk.—J. F. Elder.

Lost Nation.—E. T. Housh.

Manning.—E. Farrell.

Monticello.—E. E. Hoag.

Mapleton.—C. L. Chapman.

Madrid.—C. J. Cederquist.

Moulton.—G. L. Bovard.

North McGregor.—E. C. Gilmore.

Reinbeck.—George E. Watson.

Rock Rapids.—E. L. Partch.

Story City.—Alex. Henderson.

Seymour.—D. H. Kerby.

Sheldon.—Fred Frisbee.

Sibley.—George F. Dietrich.

Tabor.—T. C. Harris.

**MISSOURI**

Kansas City.—Henry L. Jost.

St. Joseph.—Chas. A. Pfeiffer.

Sedalia.—F. L. Ludemann.

Boonville.—J. M. Grimes.

Fulton.—R. H. Fowler.

Montgomery City.—J. R. Appling.

Salem.—W. W. Roney.

Mexico.—Willard Potts.

Macon.—Chas. Payson.

Elsberry.—J. D. Ellis.

Carthage.—W. H. Black.

West Plains.—C. T. Aid.

Brookfield.—E. M. Lomax.

Pacific.—A. Koppitz.

Warrenton.—E. F. Walker.

Lebanon.—E. F. Stebbins.

Washington.—Ed. F. Jasper.

Hartville.—J. W. Gaston.

Bismarck.—Geo. J. Goelse.

Hermann.—A. B. Walker.

Monroe City.—J. S. Scott.

Huntsville.—P. L. Vasse.

Springfield.—Geo. W. Culler.

Sikeston.—E. J. Malone.

**Calendar of Meetings****April 22.**

**Commercial Organizations of the United States.**—Convention for Purpose of Forming Permanent Organization, Washington, D. C.—Secretary Commerce and Labor, Washington, D. C.

**May 14-17.**

**National Fire Protection Association.**—Annual Meeting, Chicago, Ill.—F. H. Wentworth, Secretary, 87 Mill Street, Boston, Mass.

**May 16-18.**

**Ohio Society of Mechanical, Electrical and Steam Engineers.**—Annual Meeting, Pittsburgh, Pa.—F. E. Sanborn, Secretary, Ohio State University, Columbus, O.

**May 28-31.**

**American Society of Mechanical Engineers.**—Special Meeting, Cleveland, O.—C. W. Rice, Secretary, 29 W. 39th Street, New York City.

**May 27-29.**

**Fourth National Conference on City Planning.**—Meeting, Public Library, Boston, Mass.—Flavel Shurtleff, Secretary, 19 Congress Street, Boston, Mass.

**June 3-9.**

**American Water Works Association.**—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.

**June 11-12.**

**Police Chiefs and City Marshals' Association of Texas.**—Convention, San Angelo, Tex.

**June 10-12.**

**Mayors Conference of New York.**—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Durvee, President, Schenectady, N. Y.—C. C. Capes, Secretary, New York.

**September 24-26.**

**Central States Water Works Association.**—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

## MUNICIPAL APPLIANCES

### New Pressure Distributer for Road Oils and Tars

The Good Roads Machinery Company, Kennett Square, Pa., have placed on the market a distributor called the Monarch, having some new features. The machine is designed for applying tars and the lighter asphaltic and petroleum road oils under pressure. The Monarch Distributor consists of a steel tank having a capacity of 600 gallons, with heater and distributing attachments, mounted on a platform spring gear truck. The tank, heater and running gears are identical with those used on their Perfection Distributor, but the distributing attachment is of new design. With this complete outfit all road oils and the lighter binders can be applied cold or at any temperature up to 200 degrees F. The heater consists of a fire box located under the center of the tank. The gases of combustion pass under the entire length of the tank to the smokestack, which passes up through the tank, thus furnishing additional heating area. The flue spaces under the tank are made of steel sheets hung vertically from the greatest diameter of the tank to the frame of the running gear. This arrangement permits of utilizing more than one-half of the entire surface of the tank as heating surface. By means of this heating device the materials can be kept at any desired temperature up to 200 degrees F. This heater, however, is not designed for the original heating of the material, but rather to keep the material at a given temperature when it is placed in the tank, at that temperature, during a long haul, or up to the time of spreading in cold weather.

The wheels are of steel, heavy and durable, with broad tires to prevent cutting of the road surface, and run on roller bearing axles, which makes the draft so light that it is possible for a single team of horses to haul the outfit, loaded with 600 gallons of material, weighing approximately 8,500 pounds,

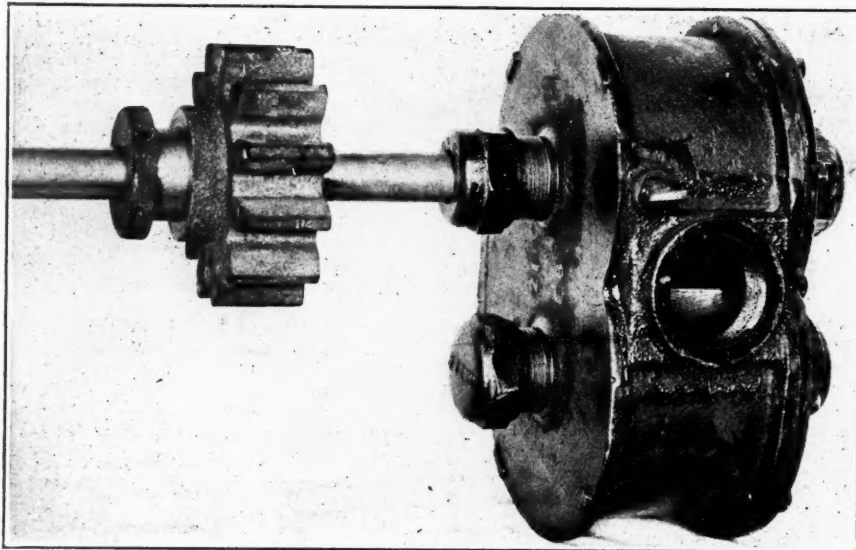
on ordinary grades. A powerful and easily operated brake is furnished to facilitate handling on grades. The outlet is placed in the bottom of the tank rather than in the end. This is a decided advantage, as it permits the complete emptying of the tank. The main shut-off valve is placed in the suction pipe and is of a specially designed quick operating type.

The distributing attachment consists of a series of pipes and a rotary hydraulic pump located directly in the discharge line from the tank. The at-

tachment is designed so that it can be mounted on the extended tank frame at the rear of any tank wagon. The pressure is generated by means of the rotary pump driven by sprockets from the rear wheel of the wagon. A large relief valve is incorporated in the discharge line of the pump and so connected with a by-pass line that any pressure from 5 to 25 pounds can be

obtained and maintained. This relief valve acts under a slight increase in pressure so that no severe strain is put upon the piping when the nozzles are completely shut off. A pressure gauge is located in the discharge line of the pump and in plain view of the operator. A screen is provided in the manhole of the tank, another is screwed on to the end of the suction pipe, where it projects into the tank, and each nozzle is also provided with a screen at its top.

A shut-off cock is placed in the main outlet from the tank so that the flow of the material can be completely cut off at this point. Valves are also provided in each leader directly above the nozzles, thus permitting of the control



ROTARY PUMP USED ON MONARCH DISTRIBUTOR.

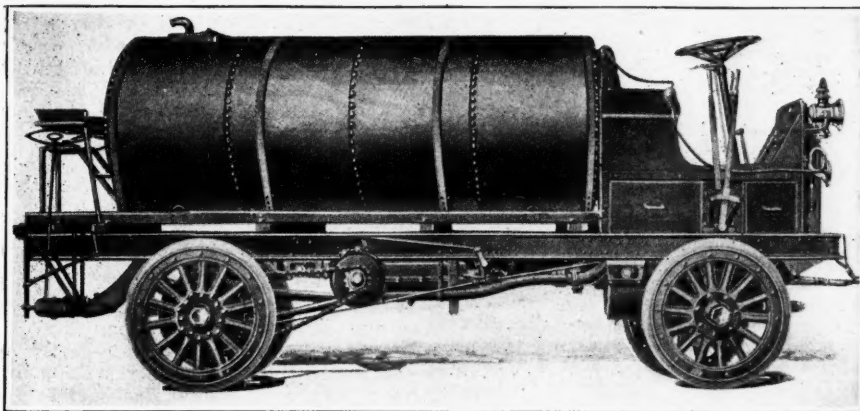
tachment is designed so that it can be mounted on the extended tank frame at the rear of any tank wagon. The pressure is generated by means of the rotary pump driven by sprockets from the rear wheel of the wagon. A large relief valve is incorporated in the discharge line of the pump and so connected with a by-pass line that any pressure from 5 to 25 pounds can be

of the flow at the moment of leaving the distributor. Four of these valves are controlled by the right-hand lever and four are controlled by the left-hand lever. The center section of four valves is arranged to be connected to either or both of the side sections by hinged links. This arrangement permits of spreading a space 2 feet wide or 4 feet wide from either side of the machine, or one space 6 feet wide as desired. The closeness of these valves to the nozzles permits of the immediate and complete shutting off of the flow when passing over cross walks. A seat is provided for the operator so hinged that it can be folded up against the tank. The spraying attachment is also arranged so that it may be folded up. The amount of material that can be distributed can be regulated as desired from .15 to .5 of a gallon per square yard of surface and can be applied under a pressure varying from .5 to 15 pounds per square inch. The pump used is of the regular inter-gear type of sufficient capacity to handle the material as fast as it can be distributed upon the surface. The packing used is of specially prepared metal to resist the effects of the hot material. Two sets of nozzles of twelve each are furnished with each attachment. One set of 5-16 inch and one set of 3-8 inch are furnished with these attachments. All materials up to and including 65 per cent. asphalts can be spread. If desired nozzles will be furnished offset so that the spray can be directed to the ground at an angle to insure complete covering of loose stones. The drive is through sprockets and chains to a counter-shaft. A No. 78



DISTRIBUTOR FOR LIGHT AND MEDIUM OILS AND TARS.





ETNYRE AUTO STREET SPRINKLER OF LARGE CAPACITY.

detachable link belt is used. A 30-tooth spur gear is mounted on the counter-shaft and engages with a 12-tooth gear on the pump shaft. A shift lever is provided for drawing the gears in and out of mesh so that the pump will not revolve when the material is not being distributed.

#### Motor Truck Street Sprinklers

E. D. Etnyre & Co., Oregon, Ill., claim to make the most complete line of motor truck and horse-drawn street sprinkling and cleaning equipment in the world. Altogether the company makes twenty-five sizes and styles, including galvanized steel or wood tanks of from 300 to 1,350 gallons capacity. The accompanying illustration shows a large size motor truck sprinkler—850 gallons capacity—with the operators seat at the rear. Of similar design so far as chassis and tank are concerned are their motor flushing machine and oiler. With the Etnyre motor truck sprinklers the volume of water can be regulated to correspond to the speed of the machine, which varies from three to fifteen miles per hour. The operator can also control the width of the spray from three feet up to the full width. The tanks are made of heavy galvanized steel, mounted on steel frames, attached to the truck frame in such a manner that the tank and sprinkler can be readily removed if desired so that the truck may be used for other purposes. Iron lugs are riveted to the four corners of the frame for the convenience of attaching chains or tackle. In order to prevent sudden shifting of the contents the tanks are provided with bulkheads. A manhole at the top of the tank, fitted with gooseneck, per-

mits of filling from hydrant or pipe.

The sprinkling device consists of two valves, one for each side of the wagon, which are independent of each other and controlled by foot-levers at each side of the driver. The valve which is horizontal consists of an inner and an outer sleeve. The inner sleeve has four parallel slots running circumferentially. The outer sleeve is cut away in part so that by rotating it more



PORT HURON SPREADING CAR.

or less the slots are exposed allowing the water to escape in narrower or wider jet as desired by the operator. A forward and backward motion of the sleeve exposes one, two, three or four of the slots making the stream heavy or light as the operator desires. Normally the pressure of the water in the tank opens the sleeve, but a ratchet on the operating lever holds it in any position desired. The tank is cleaned when necessary by releasing the lever so as to expose the open end of the cylinder.

The Etnyre company makes a combined motor truck sprinkler and flusher so that it can be used either as a sprinkler or as a flusher. In the flushing machine a powerful centrifugal pump, operated by a transmission gear connected with the motor, forces the water on the street at a uniform pressure of from 35 to 40 pounds. Road oiler attachments are interchangeable with water sprinkling attachments.

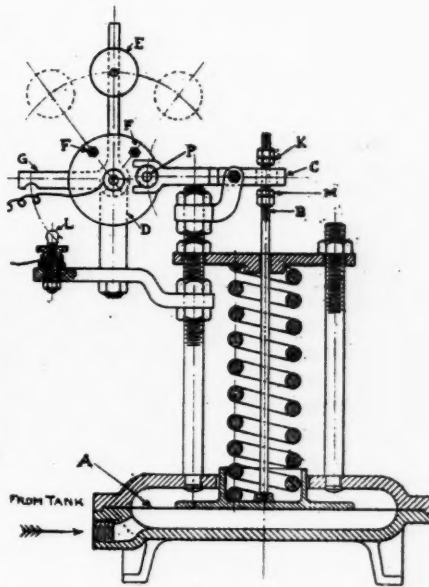
#### New Stone-Spreading Car

The Port Huron Engine and Thresher Co., Port Huron, Mich., have placed on the market a stone-spreading car of original design. It is built of steel throughout, steers by hand and is reversible. The particular advantage of the car applies to its use on narrow or crooked roads where there is insufficient room to get alongside with engine or roller. The capacity of the car with top box shown in the cuts is 6 cubic yards. According to the adjustment of the doors it spreads stone over the roadway to any depth from one to eight inches, according to the adjustment of the doors. The opening of the doors is regulated by rods and chains

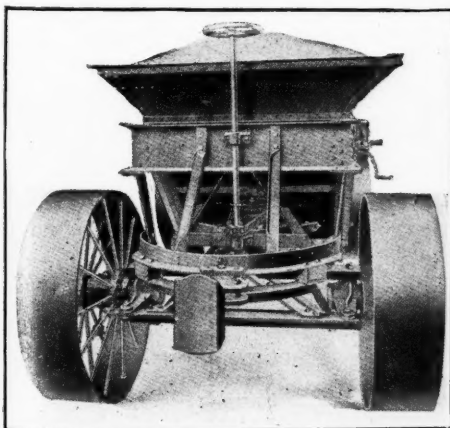
operated by a crank device on the side of the car. The main frame is made of channel steel and angle iron, the box of sheet steel. The wheels are very substantial and have wide tires. The spokes are set in the rim of the wheel, heavily countersunk and hot riveted. Spokes are cast into the hub and each given an equal tension. The wheels have roller bearings and are bushed with cold drawn steel tubing of standard size and interchangeable. This bushing is one continuous piece 12 inches long and can, if necessary, be changed in the field by an ordinary mechanic. Axles are of cold rolled steel, 3 inches in diameter and interchangeable; by changing them from one side to the other the wear is reversed and the length of life doubled. There is a substantial curb bumper at each end. This bumper or tongue can be made rigid by inserting a lock pin, or flexible by its removal. The hand steering wheel makes the control of the direction of the car unusually easy. In fact, the manufacturers state that it handles like an automobile, and call it the auto car.

#### Electrical Stop and Starter for Motor-Driven Pumps

The Golden-Anderson Valve Specialty Company, Fulton building, Pittsburgh, Pa., have placed on the market an electrical stop and starter for motor-driven pumps, for maintaining a uniform water level in tanks and standpipes and reservoirs, and for other purposes. The advantage of the apparatus is that it does away with floats and fixtures. The method of operation is as follows: The pressure coming from tank underneath the diaphragm at "A" forces rod B upward until the adjusting nuts "M" come in contact with lever "C," which in turn works on post "P," revolving the disc "D" and weight "E" until it gets over the center line, when it drops and hits the pin "F," leaving post "L," breaking the contact, which stops the motor. When the water drops the spring forces diaphragm downward and the adjusting nut "K" comes in contact with lever "C," turning plate "D" in the opposite way, and when weight "E" gets over center it hits pin "F" and lever "C," making the contact with post "L," which starts the motor. It can be operated with a spring as well as a weight, but the weight is considered as the most reliable.



ELECTRICAL STOP AND STARTER.



END OF SPREADING CAR SHOWING HEAVY WHEELS AND SUBSTANTIAL CONSTRUCTION.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago: A number of municipal letting are pending. Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham: Prices are firmer in sympathy with the pig iron market but there is no evidence of any material change in quotations. New business consists mostly of small orders. Shipments from foundries are about equal to production, and yards are kept well cleaned up. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. New York: Private buying continues in excellent volume, and one large letting is pending. However, competition continues sharp from some makers. Quotations: 6-inch, carloads, \$21 to \$23.

**Lead.**—The demand for lead has slackened and the market is dull and prices easier. The American Smelting & Refining Company continues to quote 4.20c., New York, and 4.12½c., St. Louis. Independent producers are getting less than they did a week ago and no trouble is had in getting lead from them at 4.17½c., St. Louis, and it is said that some business has been done at 4.15c.

**Receivership.**—Receivers were appointed on April 6 for Allis-Chalmers Company, the receivers being D. W. Call, president of the company, and Gen. Otto H. Falk, president of the Merchants and Manufacturers' Association of Milwaukee. While no statement to that effect could be obtained, the proceeding is probably intended to facilitate the early reorganization of the company, details of which have lately been published. Meanwhile the order of the court fully protects all parties dealing with the company, and gives assurance of the prompt fulfillment and complete performance of all outstanding and future contracts. The works will be operated by the receivers, with no cessation of activity in any line. Irving H. Reynolds, chief engineer of the company during a more profitable period of its operations, is the last of a number of men recently announced as returning to the company.

**The De Laval Steam Scale and Diagram.**—The Mollier diagram is now generally well known to engineers as the most convenient means of determining, with all the accuracy reasonably required, the heat available from the expansion of steam from a given initial condition to a given final condition, and also for determining by comparison therewith the efficiency ratio of an engine or turbine of known steam consumption, or the quality of the steam at the end of expansion in a heat motor of which the steam consumption is known.

As the Mollier diagram is ordinarily arranged, however, its use is rendered difficult and its accuracy impaired by the fact that the total heat of the steam in the initial condition must be read off from the scale and the operation repeated for the final condition, after which the figures are subtracted one from the other and multiplied by 778 to give the available foot pounds, while to obtain other quantities involves several more tedious arithmetical operations.

All these difficulties are removed by one stroke by the use of the steam scale devised and published by the De

Laval Steam Turbine Co., of Trenton, N. J., manufacturers of single and multi-stage steam turbines for all capacities. This steam scale is a graduated measuring rule, bearing four different scales, the first having uniform graduations, may be applied to the chart to measure directly the B. t. u. available between given initial and final conditions of the steam. A second edge of the rule bears a scale showing the resulting velocity of the steam when expanded through a nozzle in feet per second, which may also, therefore, be read off at once without computation. A third edge shows the duty in millions of foot pounds per thousand pounds of steam developed by a perfect engine working between the limits assumed, while the fourth edge gives the steam consumption in pounds per h.p. hour. Conversely, if the steam consumption of an actual engine be known, the last named scale enables the user to find the resulting quality of the steam at once from the diagram, without further measurement or computation. With this chart and scale in his possession, the engineer possesses the equivalent of complete steam and entropy tables, also tables for converting B. t. u. per pound of steam to jet velocity, steam consumption and duty without computation. The limits of error appear to be in general less than one per cent. and the accuracy is greater than this for some of the operations.

On the back of the chart are printed concise directions for using the scale, with an illustrative example. Copies of the scale and chart will be gladly sent by the DeLaval Steam Turbine Company to engineers and others interested in the steam consumption of engines, turbines, etc.

**Westinghouse Company.**—A plan for establishing the Westinghouse Machine Co., East Pittsburgh, Pa., on a basis that will provide ample working capital has been approved by the members of the creditors' committee. A committee of the directors of the Westinghouse Electric & Manufacturing Co., a noteholder of the Westinghouse Machine Co., has also approved the plan and will recommend its adoption. A meeting of the creditors' committee will be held April 17, at which it is understood a formal recommendation of the plan will be made, and the next step will be a special meeting of stockholders of the machine company to authorize the new securities provided for in the plan.

The chief feature of the plan, which is the joint work of George Westinghouse and the finance committee, provides for an authorization of \$5,000,000 6 per cent. preferred stock, of which \$2,000,000 will be sold at par for cash, Mr. Westinghouse undertaking to raise this sum. This preferred stock will be issued under terms as regards increased dividends as earnings warrant, similar to the terms governing the Union Switch & Signal Co.'s preferred stock, which has commanded a high premium for many years.

**Diesel Engine.**—An amended measure has passed the St. Louis Municipal Assembly and been signed by the Mayor giving to the Busch-Sulzer Bros.-Diesel Engine Co. the privileges desired to assure the construction of the company's \$500,000 plant.

**Westrumite.**—The Westrumite Company of America has been reorganized under the name of The Westrumite Company, with a capital of \$400,000. The directors are: G. S. Van Westrum, John Fowler, Chicago; William Cain, Gary; Senator Frank N. Gavit, Fred J. Smith, James A. Gill and James J. Nedjl, Whiting, Ind. The officers elected were: President G. S. Van Westrum; vice-president, James A. Gill; secretary, John Fowler; treasurer, Fred J. Smith.

The Westrumite plant in Whiting, Ind., is located on 121st street in the vicinity of the Standard Oil Company's plant. The factory occupies two acres of ground and two more acres have just been purchased to enable them to enlarge the factory to supply the demands, as the present headquarters are inadequate, and it is the aim of the directors to branch out considerably, which will not only necessitate a larger building, but also a larger working force.

The Whiting factory will operate in fourteen of the central States—Indiana, Ohio, Illinois, Wisconsin, Iowa, Michigan, Minnesota, Kansas, Nebraska, Kentucky, Tennessee, Missouri, North and South Dakota. Already a quarter of a million dollars of work is on hand to be turned out and new contracts are being received daily.

The Westrumite company manufactures a cure for dusty roads known the world over. It obtains its name from G. S. Van Westrum who developed the process in Germany, he having discovered the secret of mixing asphalt cold.

The plant was built in Whiting in about 1906, being practically the first plant in America, Mr. Van Westrum having spent several years here putting the American branch of the business on its feet. Since then he has built many factories and is now selling part of his factories in the eastern States. There are large factories in Philadelphia, Portland and in Bradford, Canada, which Mr. Van Westrum still owns. The Chicago office of the company is in the Fisher building, 53 West Jackson boulevard.

**Shipping Guide.**—The Indianapolis Trade Association has published a Shipping Guide for the use of its members. So far as the association has been able to learn, it is the most complete of its kind in the country. Its chief purpose is to indicate the most direct routing for a shipment from Indianapolis to any given point in the State and the adjoining States of Illinois, Ohio, Michigan and Kentucky. The publication is of the loose-leaf style. Opposite the name of each town is the correct routing, with kind of service, initial lines, junction points and intermediate lines, number of transfers, time of arrival at destination and whether there is a through package car to the point. Railroad men who were consulted and who have seen the guide say it is the most comprehensive volume of the kind they have ever examined. It has been copyrighted and is loaned to members of the association for their exclusive use.

**Valve.**—The Nelson Valve Co., Philadelphia, Pa., notes a material increase in its business and a night shift has been put on in the steel and bronze departments. The recent gain in business has been steady and gradual and the outlook for business is considered good, as inquiries involving future work have been numerous.



**A Gigantic Steam Turbine.**—The Brooklyn Rapid Transit Company has placed an order with the Westinghouse Machine Company, Pittsburgh, Pa., for a gigantic steam turbine. It is to be capable of delivering a continuous output of 20,000 kw., corresponding to 30,000 horsepower, and will be able to carry a load of 35,000 horsepower as a maximum. In type it will be of the Westinghouse double flow construction, and in general outline will resemble the 22,000 kw. turbine built for the City Electric Company, San Francisco, and which attracted the world-wide attention of engineers as having developed the highest thermo-dynamic efficiency on record, either in this country or abroad.

**Water Company Litigation.**—The Connecticut general assembly of 1911 granted a charter to the city of Bristol embracing authority, which had already been granted at the same session to the town of Bristol, to take over the Bristol Water Company works and operate them as a municipal enterprise. Under the charter provisions the Mayor of Bristol, John F. Wade, has brought a petition for the appointment of a committee to appraise the value of the water works, and this was returnable March 25 before Judge Wm. S. Case in the Superior Court. Counsel for the water company have demurred to the petition on the ground that the act is unconstitutional because the first appraisal binds nobody, and the court is not performing a judicial function in simply having an appraisal made for the voters to act upon. The matter was adjourned for one week.

**Bridges.**—About 40 representatives of the bridge companies of the United States held a convention recently at the Fort Pitt Hotel, Pittsburgh, Pa., at which matters related to this great industry were debated. At the Pittsburgh Athletic Association William C. Coffin, structural engineer of the Jones & Laughlin Co., gave a dinner of 25 covers to some of the bridge men already arrived. Among his guests were Mr. Fitts, of the New England Structural Iron Works, Boston; Mr. Andrews, Boston Bridge Works; Mr. Deans, Phoenix Bridge Co., Phoenixville, Pa.; Mr. Michaels, Virginia Bridge and Iron Co., Roanoke, Va.; Mr. Fuller, King Bridge Co., Cleveland; Mr. Lesh, Riverside Iron Co., Martins Ferry, O.; Mr. Holton, Chicago Bridge & Iron Co., Chicago; Mr. Earle, Pennsylvania Steel Co., Steelton, Pa.; Mr. Straub, Fort Pitt Bridge Co., Pittsburgh; Mr. Richards of the Moltke-Richards Iron Works, Indianapolis; Mr. Jadd, of Levering & Garringuez, New York; Mr. Marshall, of McClintic-Marshall Co., Pittsburgh; Mr. Bowman, Riter-Conley Co., Pittsburgh.

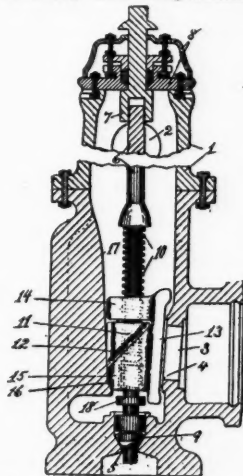
**Tank Cars.**—The Pennsylvania Tank Car Company, Sharon, Pa., has placed a contract for a new building, 40x250 feet, which will be equipped with machinery for the manufacture of steel cars. This will add largely to the capacity of the company, which reports enough orders on hand to keep its plant running full for several months.

**Meter Boxes.**—The M. & M. Meter Box Co., Hopkinsville, Ky., has been incorporated with \$1,000 capital stock by Thomas W. Morris, John J. Metcalfe and T. L. Metcalfe. The company will manufacture meter boxes, electric equipment and other apparatus used by public service companies.

## PATENT CLAIMS

**1,021,959. HYDRANT.** John H. Whitehouse, Troy, N. Y., assignor to The Ludlow Valve Manufacturing Co., Troy, N. Y., a Corporation of New Jersey. Serial No. 491,116.

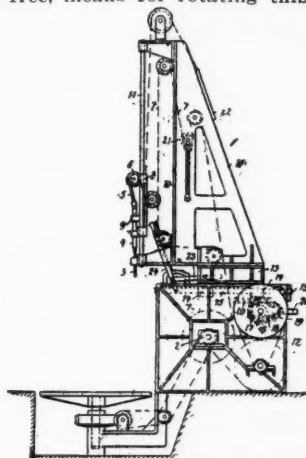
In a hydrant, and in combination, a case; a rotatory and longitudinally mov-



able stem having a screw-threaded portion; a drip-valve carried by the inner end of the stem, adapted to close a drip-outlet; a wedge-member fitting and actuated by the screw-threaded portion of the stem; a gate loosely carried by, and having a wedge-member co-operative with, said stem-actuated wedge-member; a stop on the hydrant-case located in the path of said gate when opposite its seat; and stem actuated means for binding together the members of the wedge-mechanism by the final rotative movement of the stem inclosing the gate.

**1,022,285. MACHINE FOR MAKING CEMENT PIPES OF ANY SECTIONAL FORM.** Ferdinand Wienberg, Copenhagen, and Lars Jorgensen, Carsten Jespersen, and Jorgen Kristian Jorgensen, Elsinore, Denmark. Serial No. 588,136.

In a machine for making cement pipes of any sectional form, the combination with a rotatable mold plate, adapted to carry the mold, the space above said plate being free, means for rotating this plate,



a stationary frame, an upper frame slidably mounted thereon, a stamper mounted on said upper frame, means for moving the stamper in vertical directions to stamp the cement within the mold, an interchangeable grooved guide disk, a guide pivot engaging therewith, to which said guide pivot is fixed a driving rod, secured on the upper frame, and means for rotating the guide disk to cause the frame and the stamper mounted thereon to move to and from the axis of the mold plate according to the form of the mold, of means for securing the driving rod in different positions on the upper frame so as to make the machine adjustable to different sizes of pipes, substantially as described.

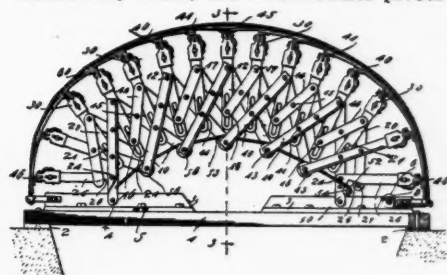
**1,021,806. APPARATUS FOR CONSTRUCTING CONCRETE PIERES, WALLS AND THE LIKE.** Samuel L. Shafer, Philadelphia, Pa. Serial No. 643,533.

A device of the character described,

comprising side planks, stay pieces spacing the upper edges of the upper planks, vertical stanchions against the side planks, rods projected through the upper ends of said stanchions, nuts screwed onto said rods, said stanchions and said planks having registering openings near their lower ends, rod frames positioned between the planks, and comprising angle irons, parallel rods projected through said angle irons and upset at their ends, said angle irons having openings, nuts against said angle irons registering with the openings, and held against rotatory movement by the engagement of said nuts with the horizontal members of said angle irons, and bolts projected through the openings in the stanchions, planks and angle irons, and screwed into the nuts, substantially as described.

**1,022,960. ADJUSTABLE MOLD FOR CULVERTS AND BRIDGES.** Peter C. Merillat, Winfield, Iowa. Serial No. 660,641.

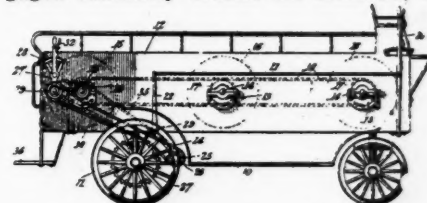
An adjustable collapsible mold for culverts or bridges, including a plurality of individual arches of lazy-tong links standing in parallel upright planes and pivoted to each other at their ends and where they cross, the intermediate pivots



being disposed below the center of the length of said links, and plates slidable on each other and each loosely connecting the upper end of a member in one arch with the corresponding member in the arch adjacent.

**1,022,583. HOSE-CARRIAGE.** Peter G. Esler, North Kaukauna, Wis. Serial No. 602,982.

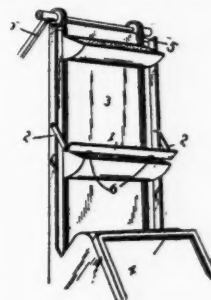
A device of the class described comprising a wheeled body, a plurality of rotatable supporting members mounted therein in transverse spaced relation, an endless hose supporting member engaged commonly around the members, a



driven sprocket carried by one member, a driving sprocket carried by a wheel of said body, movable sprockets adjacent each of the first named sprockets, an endless chain engaged over the last named movable sprockets and adapted to be engaged with the driving sprocket at one side, and adapted for engagement of one side with the driven sprocket outwardly and inwardly thereof, alternatively.

**1,022,607. STROKING ATTACHMENT FOR CONCRETE MIXING MACHINES.** Frank W. Swautusch, Butler, Ind. Serial No. 667,760.

In a traveling bucket conveyor a yieldingly supported stroking mechanism adapted to automatically stroke off the



buckets of the conveyor whereby a uniform quantity of material is elevated by the buckets.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Minnesota	Duluth	Apr. 19, 10 a.m.	Imp. roads (4 contracts)	O. G. Olson, Pres. Bd. Pub. Wks.
Indiana	Terre Haute	Apr. 20	Constrn. 5½ miles of road	R. E. Gibbons, County Surv.
Indiana	Crawfordsville	Apr. 22	Constrn. 9,500 yds. brick	H. C. McCluer, City Engr.
Ohio	Steubenville	Apr. 22, noon	Grading street	Dir. Public Service
Ohio	Youngstown	Apr. 22, noon	Grading and paving streets	W. H. McMillin, Clk. Dir. Pub. Serv.
Canada	Saskatchewan, Sk	Apr. 22, 8 p.m.	Constrn. 180,000 sq. ft. concrete sidewalk	W. H. Dixon, Sec'y.
New Jersey	New Brunswick	Apr. 22	Constrn. 45,000 yds. brick, wood block, asphalt or granitoid	Fred Schneider, City Engr.
Vermont	Burlington	Apr. 22, 2 p.m.	Constrn. cement curbs and sidewalks	Herald Stevens, Chm. St. Comm.
Texas	Sweetwater	Apr. 22	Constrn. 66,000 sq. yds. water bound macadam, 4,000 sq. yds. asphalt macad. street pav't.	L. S. Pope, City Sec'y.
Ohio	Coshocton	Apr. 22, 10 a.m.	Constrn. 2.37 miles macadam with bit. surface	J. R. Marker, Highway Comr.
Ohio	Akron	Apr. 23, 11 a.m.	Pavg. Malfield avenue	C. L. Bower, County Clk.
Ohio	Upper Sandusky	Apr. 23, 10 a.m.	Constrn. 2 miles macadam	J. R. Marker, Highway Comr.
Indiana	Ft. Wayne	Apr. 23	Furn. crushed stone for road	C. H. Brown, Aud.
Georgia	Augusta	Apr. 23, 4 p.m.	Constrn. cement sidewalks and curbing during year	Nisbet Wingfield, Comr. Pub. Wks.
Virginia	Portsmouth	Apr. 23, 8 p.m.	Constrn. 30,000 yds. pav't with bit. surface	B. F. Appenzeller, Chm. Local Bd.
Ohio	Upper Sandusky	Apr. 23, 10 a.m.	Constrn. 2 miles macadam	County Commissioner.
Ohio	Mt. Gilead	Apr. 24, 10 a.m.	Constrn. 3 miles macadam with bituminous surface	County Commissioners.
New York	Brooklyn	Apr. 24, 11 a.m.	Constrn. asph. block & granite pav't & cement sidewalks	A. E. Steers, Boro. Pres.
Tennessee	Madisonville	Apr. 24, 1 p.m.	Gradg. 160 miles of road	County Road Comm.
Maryland	Baltimore	Apr. 24, 11 a.m.	Constrn. 880 yds. vit. brick	C. A. Edel, Sec'y Pavg. Comm.
Illinois	Collinsville	Apr. 24, 8 p.m.	Constrn. 13,850 yds. vit. brick, 7,400 ft. curb, 2,850 vit. pipe	A. C. Powell, Engr. Bd. Local Imp.
Ohio	Cleveland	Apr. 24, 11 a.m.	Improving Green road	John F. Goldenbogen, Clk.
Tennessee	McKenzie	Apr. 24, 2 p.m.	Grading and graveling streets	F. D. Walpole, Recorder.
Kansas	Pittsburgh	Apr. 24, 8 p.m.	Constrn. 4,500 yds. brick paving with asphalt filler	O. T. Jones, City Clk.
Ohio	Mt. Gilead	Apr. 24, 10 a.m.	Constrn. 3 miles macadam with bit. surface	J. R. Marker, Highway Comr.
Ohio	Akron	Apr. 25 (about)	Constrn. brick road	G. L. Farnsworth, City Engr.
Ohio	Painesville	Apr. 25, 10 a.m.	Pavg. 1.41 miles with bituminated concrete	J. R. Marker, Highway Comr.
Washington	Everett	Apr. 25	Constrn. 1 mile asphalt pav't; cost, \$67,000	W. D. Barkhuff, City Engr.
Texas	Palestine	Apr. 25	Constrn. 10 sand clay roads	W. H. Harding, County Judge.
Ohio	Youngstown	Apr. 26, 10 a.m.	Pavg. 2.56 miles with water-bound macad. (2 contracts)	J. K. Marker, Highway Comr.
Missouri	St. Louis	Apr. 26	Pavg. with asphalt, brick and wood; cost, \$185,000	Board Public Works.
Ohio	Cincinnati	Apr. 26, noon	Imp. Fallis road	Stanley Struble, Pres. Co. Comrs.
Indiana	Frankfort	Apr. 26	Constrn. 20,000 yds. brick paving	H. M. Hockman, City Engr.
Kentucky	Louisville	Apr. 26, 2 p.m.	Constrn. granite pav't; cost, \$9,000	Board Public Works.
Ohio	Carrollton	Apr. 27, 9 a.m.	Constrn. 2.37 miles brick road	County Commissioner.
Illinois	Alton	Apr. 27	Pavg. Elm street	J. E. Schwaab, City Engr.
Ohio	Carrollton	Apr. 27, 9 a.m.	Pavg. 2.36 miles road with brick	J. R. Marker, Highway Comr.
New York	Elmira	Apr. 29, 11 a.m.	Constrn. 12,270 yds. brick, asphalt or wood pav't	O. H. Gardner, City Clk.
Ohio	Wyoming	Apr. 29, noon	Constrn. concrete curb and gutter	W. A. Clark, Vil. Clk.
Ohio	Lakewood	Apr. 29, noon	Pavg. 2 streets	J. W. Chrisford, Dir. Pub. Serv.
Wisconsin	Appleton	Apr. 30, 9 a.m.	Pavg. several streets	E. L. Williams, City Clk.
Illinois	Streator	Apr. 30	Constrn. pav't	W. W. Bean, Chm. Bd. Local Imp.
Illinois	Ottawa	Apr. 30	Pavg. with brick on concrete; cost, \$800,000	J. C. Moore, County Aud.
Illinois	Rochelle	Apr. 30 (about)	Pavg. with brick on concrete base; cost, \$85,000	W. B. M. Henry, Mayor; Aetna Eng. Bureau, Chicago.
North Carolina	Roxboro	Apr. 30, 4 p.m.	Constrn. 11,000 yds. bit. macadam	M. C. Winstead, Mayor.
Wyoming	Ft. D. A. Russell	May 1, 10 a.m.	Repair, roads	Major A. W. Kimball.
Indiana	South Bend	May 1	Constrn. 3 miles crushed granite paving	J. W. Harbou, County Aud.
Arkansas	Ft. Smith	May 1, noon	Pavg. Garrison avenue	City Engr.
Ohio	Cedar Point	May 1	Laying out a road	Cedar Point Resort Co.
South Dakota	Mellette	May 1	Constrn. 8 miles of road	F. G. Haven, County Clk.
Ohio	Struthers	May 2, noon	Constrn. brick paving	Ira Isenbraun, Vil. Clk.
Indiana	Folwell	May 6, 1 p.m.	Constrn. number of roads	L. Shipman, County Aud.
North Carolina	Raleigh	May 6	Constrn. 1 mile macadam road with binder	E. L. Wiggs, Gen'l Supt.
Indiana	Brazil	May 7	Imp. highway, 15,800 ft. long	W. A. Staggs, County Aud.
Indiana	Vincennes	May 7, 2 p.m.	Constrn. 22,000 ft. gravel roads (3 contracts)	J. T. Scott, County Aud.
Florida	Palatka	May 7, 8 p.m.	Constrn. 52,000 yds. gravel and shell road	S. C. Stallings, City Engr.
Mississippi	Aberdeen	May 7, 2 p.m.	Constrn. 26 miles rock and gravel roads	Good Roads Commission.
Indiana	Decatur	May 7	Constrn. 2 roads	County Auditor.
Indiana	Brazil	May 7	Constrn. 3 miles stone road	E. A. Staggs, County Aud.
Michigan	Manistee	May 13, 2 p.m.	Constrn. macadam roads	Road Commissioners.
Georgia	Bainbridge	May 15, 7.30 p.m.	Constrn. 22,000 yds. paving	J. W. Callahan, Mayor; H. S. Jauden, Engr., Savannah.
Michigan	Holland	May 15	Constrn. 1½ miles bit. paving; cost, \$45,000	H. A. Naberhuis, City Engr.
Ohio	Madison	May 15 (about)	Constrn. 2 miles macad. road	G. C. Ward, Engr., Painesville.
Minnesota	Breckinridge	May 20, 10 a.m.	Constrn. 1½ miles of road	P. E. Truax, County Aud.
Texas	Paris	May 21	Constrn. 40 or more miles stone roads & building bridges	W. F. Gill, Sec'y Road Commr.
Ohio	Canton	June 1	Pavg. Broadway with brick block	R. F. Harbent, Dir. Pub. Serv.
Oregon	Fossil	July 3, 1 p.m.	Constrn. roads and bridges	H. F. C. Heidtmann, County Surv.
<b>SEWERAGE</b>				
Colorado	Denver	Apr. 19, 11 a.m.	Constrn. sewers and appurtenances	Henry Reed, Pres. Bd. Pub. Wks.
Ohio	Cincinnati	Apr. 19, noon	Constrn. main and lateral sewers	Dir. Public Service.
Wisconsin	Racine	Apr. 20, 10 a.m.	Constrn. sewers 2 streets	T. H. Conolly, City Engr.
Iowa	Chariton	Apr. 22, 1 p.m.	Extending sewer	G. J. Gittinger, City Clk.
Alabama	Fayette	Apr. 22	Constrn. sewers and water works	E. B. Kay, Engr., Tuscaloosa.
New Jersey	Monmouth Beach	Apr. 22, 8 p.m.	Constrn. sewers, disposal plant and pumping station	J. W. Potter, Boro. Clk.; Clyde Potts, Engr., 30 Church St., New York.
Washington	Cashmere	Apr. 22	Constrn. sewers and sidewalks	S. H. Andrews, City Clk.; J. M. Crom, City Engr.
Pennsylvania	Oil City	Apr. 22	Constrn. 4,000 ft. 6 to 12-in. clay pipe sewers	B. F. Roess, City Engr.
New Jersey	Rahway	Apr. 23, 8 p.m.	Constrn. 3,500 ft. 6 to 12-in. vit. pipe	Common Council.
Georgia	Augusta	Apr. 23	Constrn. brick and pipe sewers	Nisbet Wingfield, Comm. Pub. Wks.
Canada	Toronto, Ont.	Apr. 23	Constrn. 2 sections high level interceptor	G. R. Geary, Mayor.
Pennsylvania	Cresson	Apr. 23	Constrn. disposal plant for sanitorium	Sam'l Dixon, Comr., Harrisburg.
New York	Middleport	Apr. 24	Constrn. 6 miles pipe sewers	C. A. McDonald, Village Clk.
Ohio	Andover	Apr. 24	Constrn. 5 miles 8 to 12-in. sewers	F. A. Woodward, City Clk.



## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Illinois.....	Collinsville.....	Apr. 24.....	Constrn. 2,800 ft. pipe sewer.....	A. C. Powell, City Engr.
Louisiana.....	New Orleans.....	Apr. 25, noon.....	Constrn. concrete lined and covered sewer, 7,310 lin. ft. terra cotta pipe line, 26 to 6-in. diameter.....	F. S. Shields, Secy. Sew. & Water Bd. Board Public Works.
Indiana.....	New Albany.....	Apr. 26.....	Constrn. Vincennes street sewer.....	J. W. Chrisford, Dir. Pub. Serv.
Ohio.....	Lakewood.....	Apr. 29, noon.....	Constrn. sewer in Detroit avenue.....	W. L. Craft, City Clk.
Virginia.....	Roanoke.....	Apr. 30, noon.....	Constrn. sewer.....	J. E. Wiser, Clk.
New York.....	Newark.....	Apr. 30.....	Constrn. 100,000 ft. 6 to 18-in. clay pipe sewers & disp. plant.....	W. B. McHenry, Mayor.
Illinois.....	Rochelle.....	Apr. 30.....	Constrn. sewer system.....	City Commissioners.
Canada.....	Edmonton, Alta.....	Apr. 30.....	Constrn. reinforced concrete sewer in tunnel.....	W. B. McHenry, Mayor.
Illinois.....	Rochelle.....	Apr. 30.....	Constrn. sewer system.....	W. P. Neafsey, Street Comm.
New Jersey.....	Elizabeth.....	May 1, 8.30 p.m.....	Constrn. sewers 2 streets.....	Town Clerk and F. G. Dessery, Eng.
California.....	Covina.....	May 1.....	Constrn. sewer system; cost, \$45,000.....	Los Angeles, Cal.
Illinois.....	Altamont.....	May 1.....	Constrn. sewer system.....	City Council.
California.....	Venice.....	May 1.....	Constrn. sewers; cost, \$15,000.....	G. F. Lewin, City Engr.
Ohio.....	Bellefontaine.....	May 1.....	Constrn. sludge bed, furn. pump.....	F. D. Outland, City Aud.
Ohio.....	Elyria.....	May 1.....	Constrn. 1,700 ft. 8-in. clay pipe sewer.....	C. M. Theobald, City Engr.
New Jersey.....	Longport.....	May 9.....	Constrn. sewer system; cost, \$10,000.....	Boro. Council.
Ohio.....	Canton.....	June 15.....	Extend. storm sewer, Liberty street.....	P. H. Weber, City Engr.
<b>WATER SUPPLY</b>				
Wisconsin.....	Watertown.....	Apr. 22, 8 p.m.....	Furn. 700-gal. centrifugal pump and motor.....	W. F. Voss, Sec'y Comm.; W. G. Kirchoffer, Engr., Madison.
Oregon.....	Talent.....	Apr. 22.....	Constrn. well.....	T. L. Stewart, Engr.
Missouri.....	St. Louis.....	Apr. 23, noon.....	Making alterations in settling basin.....	Board Public Imp.
Missouri.....	St. Louis.....	Apr. 22, noon.....	Furn. water meters.....	J. B. Thomas, Comm. Supplies.
New York.....	Middleport.....	Apr. 24.....	Constrn. 8 miles c. i. pipe, pumping station, etc.....	C. A. McDonald, Vil. Clk.; C. C. Hopkins, Engr., Rochester.
Michigan.....	Manchester.....	Apr. 24 (about).....	Constrn. water works; cost, \$28,000.....	City Clerk.
Illinois.....	Normal.....	Apr. 24, 4.30 p.m.....	Constrn. well, pumping machinery, reservoir, building.....	T. H. Keys, Clk.
Ohio.....	Canton.....	Apr. 24, noon.....	Furn. meters for water works.....	R. F. Harvert, Dir. Pub. Serv.
Pennsylvania.....	Hanover.....	Apr. 24, 7 p.m.....	Furn. 50 water plugs and supplying water.....	F. C. Rowe, Sec'y Commrs.
New Jersey.....	Jersey City.....	Apr. 24, 10.30 a.m.....	Furn. valves and water meters.....	E. B. See, Clk. Water Comm.
Georgia.....	rt. Screven.....	Apr. 25, 11 a.m.....	Constrn. steel tank.....	Constrn. Quartermaster.
Illinois.....	Ashton.....	Apr. 25, 1 p.m.....	Constrn. water works, incl. well, sta'n, reser., hydrants, etc.....	S. T. Zeller, Jr., Pres.
Nebraska.....	Ainsworth.....	Apr. 26.....	Constrn. water works improvements; cost, \$21,000.....	W. N. Ely, Vil. Clk.; Bruce & Standeven, Engrs, Omaha.
Massachusetts.....	Boston.....	Apr. 26, 3 p.m.....	Furn. pump and motor, 35 cu. ft. per second capacity.....	R. S. Peabody, Chm. Park Comm.
New York.....	White Plains.....	Apr. 29.....	Constrn. filtration system, 1,000,000-gal. capacity.....	Water Commissioners.
Ohio.....	Lakewood.....	Apr. 29, noon.....	Constrn. steel water tower.....	Dir. Public Service.
Canada.....	High River, Alta.....	Apr. 30.....	Constrn. water works and sewer system.....	G. E. Mack, Sec'y.
Indiana.....	Logansport.....	Apr. 30, 10 a.m.....	Constrn. head gate, concrete piers, wood gates & bridge floor.....	F. H. Thompson, Chm. Bd. Pub. Wks.
Iowa.....	Burlington.....	May 1.....	Constrn. concrete settling tank.....	Citizens Water Co.
Illinois.....	Altamont.....	May 1.....	Constrn. water works and furn. hydrants, valves, c. i. pipe, pumps, tower and tank.....	City Council.
Kansas.....	Burr Oak.....	May 1 (about).....	Constrn. water system; estimated cost, \$25,000.....	J. E. Hawley, Mayor; Goodwin & Hayes, Consult. Engrs., Kansas City, Mo.
New York.....	Jamestown.....	May 2, noon.....	Furn. 16 and 24-in. c. i. pipe and specials; also laying same. Constrn. 5,000,000-gal. covered reservoir.....	Water Commrs.; Chester & Fleming Engrs., Pittsburgh.
Georgia.....	Baxley.....	May 3.....	Constrn. 2,000 ft. 6 and 8-in. c. i. pipe.....	W. H. Watson, Mayor; W. W. Lyon, Engr., Jacksonville.
Oregon.....	Monmouth.....	May 4, 3 p.m.....	Constrn. water system; estimated cost, \$1,500 to \$2,000.....	I. E. Stitt, City Clk.; L. C. Kelsey, Consult. Engr., Box 305, Portland, Ore.
Michigan.....	Kalamazoo.....	May 6, noon.....	Constrn. two 36-ft. tanks, 70 ft. high.....	C. L. Miller, City Clk.
Canada.....	Halifax, N. S.....	May 15.....	Constrn. water works; cost, \$100,000.....	F. W. W. Doane, City Engr.
Pennsylvania.....	Erie.....	May 17.....	Constrn. filter plant, pumping machinery, etc.....	Commissioners of Water Works.
Florida.....	Titusville.....	May 20.....	Constrn. water works.....	Geo. M. Robbins, Chm. Bond & Trus.
Colorado.....	Aguilar.....	June 1 (about).....	Constrn. water works; cost, \$70,000.....	City Clerk.
<b>LIGHTING AND POWER</b>				
Mississippi.....	Hattiesburg.....	Apr. 22, 2 p.m.....	Constrn. lighting plant in college.....	T. P. Scott, Sec'y, Jackson, Miss.
Michigan.....	Monroe.....	Apr. 22.....	Install. lighting system in county infirmary.....	J. S. Knapp, Sec'y Comm.
Michigan.....	Ann Arbor.....	Apr. 22.....	Constrn. power house.....	G. S. Williams, Consult. Engr.
Mississippi.....	Yazoo City.....	Apr. 27, 3 p.m.....	Furn. electrical machinery and apparatus.....	Public Service Commission.
Dist. Columbia.....	Washington.....	Apr. 27, 11 a.m.....	Furn. two 100-kw. motor generator sets.....	Navy Department.
California.....	Roseville.....	Apr. 29.....	Constrn. new light plant or substation and supplying lamps.....	U. S. Marshall, City Engr.
Georgia.....	Baxley.....	May 3.....	Constrn. lighting plant.....	W. H. Watson, Mayor; W. W. Lyon, Engr., Jacksonville.
Ohio.....	Brathenahl.....	May 3, noon.....	Lighting streets with 160 vapor lights.....	C. A. Neff, Vil. Clk.
Kansas.....	Topeka.....	May 7, 2 p.m.....	Furn. 50-h.p. engine and generator.....	H. C. Bowman, Chm. State Bd. Con.
Pennsylvania.....	Newcastle.....	May 13, noon.....	Light. streets with arc and incandescent lights.....	F. M. Hartman, City Clk.
<b>FIRE EQUIPMENT</b>				
Michigan.....	Ishpeming.....	Apr. 22, 1 p.m.....	Bldg. fire hall.....	P. H. Devine, Supt. Bd. Pub. Wks.
New Jersey.....	Jersey City.....	Apr. 24, 10.30 a.m.....	Furn. fire hydrants.....	E. B. See, Clk. Water Comm.
Ohio.....	Marietta.....	Apr. 25.....	Furn. triple comb. auto fire engine.....	W. E. Daker, Dir. Pub. Safety.
Texas.....	Galveston.....	Apr. 25, noon.....	Furn. combination chemical and hose wagon.....	A. P. Norman, Comm.
Rhode Island.....	Woonsocket.....	Apr. 25, 4 p.m.....	Bldg. fire station.....	F. X. Berard, Chm. Comm.
Montana.....	Shelby.....	May 1.....	Furn. 4,000 ft. of hose.....	City Clerk.
Canada.....	Vancouver, B. C.....	May 1.....	Furn. 2 auto pump. engs., 2 serv. trucks, 1 chemical, 3 hose wagons, auto aerial ladder truck, chief's car; also poles and nozzles, \$8,000.....	Fire Chief Carlisle.
Georgia.....	Atlanta.....	May 4.....	Constrn. fire alarm system.....	Chief of Department.
Michigan.....	St. Joseph.....	June 1.....	Furn. 500 ft. fire hose.....	H. G. Hughson, Chief Dept.
<b>BRIDGES</b>				
Pennsylvania.....	Reading.....	Apr. 22, 10 a.m.....	Constrn. 3 reinforced concrete bridges.....	D. K. Hoch, County Compt.
Virginia.....	Bedford City.....	Apr. 22, 10 a.m.....	Re-constrn. bridge.....	W. T. Pollard, County Clk.
Ohio.....	Niles.....	Apr. 22, 1 p.m.....	Constrn. steel and concrete bridge.....	F. T. Stone, County Aud.
Nebraska.....	Spring View.....	Apr. 23.....	Constrn. two bridges across river.....	John Scheie, County Clk.
Delaware.....	Wilmington.....	Apr. 23, noon.....	Constrn. sub. and superstructure of movable bridge.....	S. J. Dennison, Chm. Comm.
Illinois.....	North Chicago.....	Apr. 23, 10 a.m.....	Constrn. concrete foot bridge.....	Navy Department.
Illinois.....	Chicago.....	Apr. 24, 11 a.m.....	Constrn. substructure of bridge.....	L. E. McGann, Comm. Pub. Wks.
Ohio.....	Cleveland.....	Apr. 24, 11 a.m.....	Constrn. concrete bridge.....	J. F. Goldenbogen, County Clk.
North Dakota.....	Grand Forks.....	Apr. 26.....	Constrn. bridges.....	Hans Anderson, County Aud.
Ohio.....	Columbus.....	Apr. 26.....	Constrn. concrete arch bridge.....	County Commissioners.
Ohio.....	Cleveland.....	Apr. 27, 11 a.m.....	Constrn. foundation for two piers.....	J. F. Goldenbogen, Clk. Co. Comm.
Nebraska.....	Arlington.....	Apr. 30.....	Constrn. reinforced concrete arch bridge.....	O. T. Anderson, County Clk.
Indiana.....	Richmond.....	May 1, 11 a.m.....	Constrn. a number of bridges.....	County Commissioners.
Iowa.....	Creston.....	May 6, 4 p.m.....	Constrn. concrete bridge.....	T. S. Delay, County Surv.
Michigan.....	Kalamazoo.....	May 6, noon.....	Constrn. reinforced concrete bridge.....	C. L. Miller, City Clk.
Florida.....	Tampa.....	May 7.....	Constrn. Lafayette street bridge.....	Board Public Works.
Indiana.....	Vincennes.....	May 7, 2 p.m.....	Constrn. 9 bridges.....	J. P. Scott, County Aud.
West Virginia.....	Marlington.....	May 7.....	Constrn. several bridges.....	C. J. McCarty, County Clk.
<b>MISCELLANEOUS</b>				
Kentucky.....	Louisville.....	Apr. 17, 8 p.m.....	Furn. 5-passenger touring car.....	S. E. Jones, Bd. Education.
Minnesota.....	Duluth.....	Apr. 18, 10 a.m.....	Furn. Indian motorcycle.....	C. H. Troyer, Chief of Police.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
New York...	Belmont.....	Apr. 22, 10 a.m.....	Constrn. extensions to jail.....	B. B. Ackerman, Board Supervs.
North Dakota...	Grand Forks.....	Apr. 22.....	Remodel. county jail.....	County Commissioners.
Indiana.....	Indianapolis.....	Apr. 23, 10 a.m.....	Furn. cuivert pipe.....	W. T. Patten, County Aud.
Pennsylvania.....	Philadelphia.....	Apr. 23, noon.....	Furn. one or more automobiles.....	M. L. Cooke, Dir. Pub. Wks.
California.....	Vernon.....	Apr. 23.....	Furn. street sprinkler, dump wagon, street sweeper; also furn. labor and machinery for cleaning sts.....	T. J. Furlong, City Clk.
Ohio.....	Cleveland.....	Apr. 24, noon.....	Constrn. aqueduct for lighting plant.....	W. J. Springborn, Dir. Pub. Serv.
Texas.....	Galveston.....	Apr. 25, noon.....	Furn. fuel oil for power plants.....	H. C. Lange, Comm.
New Jersey.....	Newark.....	Apr. 25, 3.30 p.m.....	Furn. 2 motor-power comb. patrol wagons and 1 automobile.	John Bader, Pres. Bd. Police Comm.
Texas.....	Brownsville.....	Apr. 29, 10.30 a.m.....	Bldg. court house and jail.....	County Auditor.
Texas.....	Galveston.....	May 1.....	Constrn. sanitary jail.....	J. M. Church, County Aud.
Delaware.....	Wilmington.....	May 1, 10 a.m.....	Collect. and removing garbage for term of 3 years.....	C. W. Malcom, Sec'y Bd. Health.
Cuba.....	Santiago.....	May 6.....	Constrn. 6,400 meters of tramway.....	La Jefatura del Distrito de Oriente.
Florida.....	Clearwater.....	May 7, noon.....	Constrn. county court house and jail.....	C. W. Wiecking, Clk. of Bd.
California.....	San Francisco.....	May 8, 2.30 p.m.....	Furn. & deliver. 43 double end pay-as-you-enter California type motor cars & 4 extra trucks complete with axles, wheels and motors.....	Board Public Works.

## STREET IMPROVEMENTS

**Texarkana, Ark.**—Street improvements are being considered.

**Los Angeles, Cal.**—Widening of Sixth st. to 60 ft. has been authorized.

**Los Angeles, Cal.**—Ordinances of intention for improvement of various streets have been prepared by City Engineer.

**Los Angeles, Cal.**—Movement for widening Vermont ave., from Wilshire blvd. to Los Feliz ave. to afford proper entrance to Griffith Park, is being favorably considered.

**Oakland, Cal.**—Resolutions have been adopted for improvement of various streets.

**Pasadena, Cal.**—Improvement of Lincoln ave., from Fair Oaks ave. to Forrest ave., has been authorized.

**Sacramento, Cal.**—Thirty miles of road will be ordered constructed in a few weeks.

**San Francisco, Cal.**—Ordinance has been passed appropriating \$19,000 for repaving with basalt blocks Howard st. westerly from Second.

**Bridgeport, Conn.**—It has been decided to widen Main st. eight ft., from Bank to John sts.

**Atlanta, Ga.**—It is proposed that Icy st., from Decatur to Peachtree st., be brought to definite grade and repaved. Work will involve expenditure of at least \$50,000.

**St. Petersburg, Fla.**—County Commissioner of Pinellas County has adopted resolution calling for bond issue of \$370,000. Of this amount \$300,000 is to be used for good roads in various parts of county.

**Rome, Ga.**—Paving of Ave. A, from Fifth ave. to West 10th st., has been asked for.

**Evansville, Ind.**—Appropriation of \$7,000 for opening Garvin st., from Igleheart ave. to Canal st., will be requested of City Council by Board of Public Works. This amount will be additional to \$3,000 appropriated by Council.

**Evansville, Ind.**—Board of County Commissioners has authorized improvement of Whetstone rd. in Center Township with rock. J. D. Saunders is Engineer.

**Evansville, Ind.**—Petitions for improvements of four roads with rock have been filed with County Auditor. Roads to be improved are Slaughter ave. rd. in Knight Township, Haucke rd. in Center Township, St. Joseph and Cynthia rd. in German Township and Whetstone rd. in Center Township.

**Indianapolis, Ind.**—Improvement of Ray st. is being asked.

**Indianapolis, Ind.**—Board of Public Works has confirmed resolution for paving of Fletcher ave., from State ave. to St. Paul st.

**Indianapolis, Ind.**—Board of Public Works has confirmed resolution for resurfacing North Alabama st., from Massachusetts to Ft. Wayne aves.; also for permanent paving of Park ave., from Fall Creek to 34th st.

**Logansport, Ind.**—Board of Public Works has authorized improvement of Burlington ave. by grading and paving roadway with granite block. Work will consist of 19,220 sq. yds.; estimated cost, \$40,000.

**Newcastle, Ind.**—City Council has ordered pavement of four cross streets in city.

**Oskaloosa, Ia.**—Mayor Reynolds recommends purchase of steam roller for work.

**Elkton, Ky.**—Steps are being taken preparatory to calling of election for \$200,000 bond issue for good roads.

**Jefferson, Ky.**—In office of County Auditor Stoner petition has been filed by George Allen and others asking County

Commissioners to order election to vote on question of building seven miles of free gravel road in Carr Township.

**Leavenworth, Kan.**—An ordinance has been passed providing for curbing of Olive st., from west line of Seventh st. to east line of Broadway. J. H. Kirmeyer, City Clerk.

**Baltimore, Md.**—City is advertising paving of Mason and Jenkins alleys, between Preston and Hoffman sts. Chas. A. Edel is Secretary of Paving Commission.

**Little Compton, Mass.**—Sum of \$2,000 has been appropriated for repairs of highways.

**Lynn, Mass.**—Granolithic sidewalks will be laid in various sections of city.

**Bessemer, Mich.**—City street improvement bonds of \$25,000 have been carried; also Gogebic County good roads bonds of \$15,000.

**Elkland, Mich.**—Voters have appropriated \$3,500 towards improvement of two more miles of State road.

**Grand Haven, Mich.**—Good roads proposition has been carried in Ottawa County.

**Marshall, Mich.**—County good roads proposition has been carried.

**Grand Haven, Mich.**—Special meeting of Board of Supervisors has been called to make arrangements for the \$600,000 in road bonds which electors of county favored by their vote at April election.

**Owosso, Mich.**—Supervisors have voted for submission of county road system. Question will be submitted to Shiawassee County electors at August primary.

**Hibbing, Minn.**—Two miles of paving will be constructed this summer.

**Sedalia, Mo.**—Sedalia 12-Mile Special Road District Commissioners have ordered special election to be held April 20 to vote on proposition to issue \$200,000 of bonds to complete to district limits 16 rock roads radiating from this city. To complete these roads to district limits will require construction of 52 miles of rock or gravel road.

**Rochester, N. H.**—It has been voted to purchase new steam road roller and appropriation has been made for same.

**Atlantic City, N. J.**—Councilman Kessler has given notice of introduction of big paving ordinance in April, which will cover perhaps 25 squares of alleyways and small streets. Specifications for up-town avenues which are torn up, have been presented to Mr. Kessler and approved and bids will be asked for in short time.

**Camden, N. J.**—Ordinance has been passed directing the paving of Orchard st., from Mt. Vernon st. to Chestnut st.

**Collingswood, N. J.**—Council has passed ordinance providing for paving of all unpaved sidewalks.

**Cranford, N. J.**—Township Committee has decided to place tarvia on Elizabeth, Lincoln, Central and Cranford aves. Tarvia will cost about \$1,000.

**Elizabeth, N. J.**—Ordinance has been adopted for paving of Louisa st. and Atlantic ave.

**Elizabeth, N. J.**—Repaving of First st. is being discussed by property owners along that thoroughfare.

**Irrington, N. J.**—Mayor W. L. Gloroux has signed ordinance providing for sprinkling with oil surface of large number of streets.

**Paterson, N. J.**—Work will shortly commence on six roads to cost about \$80,000, of which State will pay one-third.

**Paterson, N. J.**—It has been decided to use bituminous macadam on following roads: Valley road, from D. L. & W. crossing at Barclay st. to Essex County line; Little Falls turnpike, from Spruce st. to W. 30th st.; Long Hill road and Little Falls turnpike, from Essex County line to Browertown road. Bloomingdale road, from Bloomingdale to Midvale-

Pompton road, will be macadamized. Bids on the work will be solicited at early date.

**Ventnor City, N. J.**—Special election will be held for voting on \$25,000 bond issue for permanent improvement of streets and highways. E. Steelman Royal, City Clerk.

**Amsterdam, N. Y.**—State Engineer John A. Benschel has approved of plan to pave West Main st. distance of 42,000 yds.; estimated cost, \$100,000.

**Newburgh, N. Y.**—Approximate cost of paving Liberty st. from Renwick st. to southern boundary of Washington Heights as estimated by City Engineer Blake, will be \$19,700.

**Newburgh, N. Y.**—Petition has been received asking for permanent improvement with modern pavement of Montgomery st., from 1st to South st.

**North Tonawanda, N. Y.**—Movements have been started to have Robinson and Falconer sts. in this city paved with brick. Petitions are being circulated and matter will be taken before Common Council here on Tuesday night, April 16.

**Old Forge, N. Y.**—Contract for construction of portion of highway on Route No. 25 will shortly be let.

**Poughkeepsie, N. Y.**—Sheet asphalt pavement has been ordered for North Hamilton st., from south line of Cottage to south line of North st. Commissioner Sadler has moved that Little Smith st. be paved with vitrified brick, from Main to Mill sts.; also sidewalk to be of either stone or concrete.

**Rochester, N. Y.**—Bids will be received for Spring st. asphalt pavement, Portsmouth Terrace crescent wood block pavement; sprinkling of the streets during the 1912 season; Melville st. asphalt pavement and sweeping, cleaning and flushing.

**Saranac Lake, N. Y.**—Highway Commission has decided to locate route of new highway from New York to Rouses Point at village of Rouses Point.

**Saranac Lake, N. Y.**—Construction of Tupper Lake-Long Lake highway is being discussed.

**Scotia, N. Y.**—Paving of Ballston ave. is being discussed.

**Syracuse, N. Y.**—Ordinance has been adopted for grading of Elsnor and Helen sts., also paving of Willis ave.

**Asheboro, N. C.**—In three townships of this county—Asheboro, Randleman and Brewer—bonds totalling \$80,000 have been voted for construction of Randolph and Cumberland Railway, while in two townships—Grant and Newmarket—bonds to amount of \$20,000 were defeated. This gives grand total of \$310,000 in bonds that have been voted in Randolph, Guilford and Forsyth.

**Cincinnati, O.**—Bond issues of \$1,800,000 have been tentatively agreed upon for this year's improvements at first bond budget meeting in Council chamber. Sum of \$950,000 will be needed for street improvements.

**Cleveland, O.**—Bids will be received at office of City Auditor, Room 213, City Hall, until 12 noon, April 22, for purchase of \$366,000 worth of street improvement coupon bonds. Thomas Coughlin, City Auditor.

**Cleveland, O.**—Bids will be received at office of City Auditor, Room 213 City Hall, until 12 o'clock noon, on May 10, for the purchase of \$450,000 city street improvement coupon bonds. Thomas Coughlin, City Auditor.

**Dayton, O.**—More than 400 residents along Bolander ave., Miami Chapel rd. and Cincinnati st. have signed petition for improvement of these thoroughfares.

**Dayton, O.**—Bond ordinance in sum of \$102,000 will be recommended by Finance Committee of City Council. Of this amount sum of \$20,400 is for defrayal of



city's share of street paving, grading and graveling; \$5,700 for municipality's share of cost of constructing sidewalks, curbing and guttering, in which all wards will be represented, and \$1,000 for Clayton st. condemnation.

**Dayton, O.**—Petition is being circulated asking for oiling of Eagle st. throughout coming summer.

**Girard, O.**—Village Clerk has been instructed to advertise for bids for paving of State st.

**Springfield, O.**—Property owners and citizens are urging city officials to repair South Limestone st., between paving and corporation line.

**Springfield, O.**—More than 51 per cent. of property owners along Urbana and Yellow Springs pikes have filed petitions with County Commissioners asking for improvement of those highways. They ask State aid and for macadam paving.

**Toledo, O.**—Resolution has been adopted for improving Wabash st., from Erie st. to Toledo st.; Louis and Western Railroad by grading and paving. John M. Babcock, Clerk of Council.

**Urbana, O.**—County Engineer Richard Darnell and three assistants began preliminary survey of portion of road near Mechanicsburg which is to be repaired. This road extends from mile of road which was built by State last year for distance of one mile west.

**Youngstown, O.**—To provide money for road improvements during coming summer, Good Roads Commissioners have sold bonds to amount of \$200,000. Weil, Roth & Co., of Cincinnati, offered premium of \$7,255, and were given bonds.

**Youngstown, O.**—Ordinances have been passed authorizing paving of various streets. Road Board plans to repave with brick Boardman rd., from Kyle's Corners to Boardman Center, 3½ miles; Cornersburg rd., from Kyle's Corners to Ribblett's Corners, 2 miles; Mahoning ave. extension, from city limits to Perkins' Corners, 1½ miles, and Albert st. extension, from McGuffey st. to Hubbard rd., one mile; also following macadam roads about county: Pleasant Grove rd. extension, Boardman Township, ¾ mile; one-half of Beaver-Boardman town line rd., from Woodworth to New Buffalo, 2½ miles; Youngstown-Austintown town line road, from Cornersburg to Trumbull county line, 5 miles; Raccoon rd., 1½ miles, Smith's Corners rd., 1½ miles, both in Austintown Township; Kirk rd. (extension of Smith's Corners road), 1½ miles, roads west and north from Rosemont, 1 mile each, all in Jackson Township.

**Coalgate, Okla.**—City Council has passed resolution to pave principal business streets of city.

**Eugene, Ore.**—City will receive sealed bids at office of Recorder for purchase of \$50,000 of paving bonds until April 29, at 7:30 o'clock p.m. R. S. Bryson, Recorder.

**Portland, Ore.**—Steps are now being taken to hard-surface boulevard, from Patton ave. to Wabash st. and to improve Wabash st., from boulevard to Lombard st.

**Altoona, Pa.**—Ordinance is being considered providing for special election on June 25 for voting on proposed loan of \$150,000, of which \$50,000 will be used for resurfacing paved streets, including 7th ave.

**Franklin, Pa.**—Select Council has passed on final reading ordinance providing for repaving of 13th st., paving of lower Liberty and of Elk, from 8th to 4th, and for 13th st. sewer. City Engineer John R. Snow estimates cost to city for paving of 13th st., from Lake Shore depot to bridge at \$20,000. Cost of the same street from the bridge to Grant was given at \$8,000 for city. Mr. Snow estimated cost of paving of Liberty, from 4th to 1st, at \$2,060 for city. Cost of paving Elk, from 8th to 4th, he figured at \$2,300 for city.

**Harrisburg, Pa.**—Eleven ordinances to pave streets have been passed on first reading. To complete job would involve maximum cost of about \$100,000, and minimum cost of about \$67,000. Figures submitted by Highway Committee placed cost of top-surfacing, without concrete base, at \$57,000 and with concrete base at \$81,000. Steel-bound granolithic curbing, it was figured, would cost \$15,000, as against \$10,000 for plain curb.

**McKeesport, Pa.**—Resolution has been adopted in favor of repaving Fifth ave., Market and Walnut sts. Estimates for improving Fifth ave. is \$55,918.80, for Walnut st., \$37,268.10, and for Market st., \$3,000.60, making total of \$96,191.50.

**Pittsburgh, Pa.**—Following presentation of ordinances to Council recently by Director Armstrong, of Public Works Department, in which he asked authorization of ordinance for street repaving to amount of \$169,000, which included some of main thoroughfares of downtown sec-

tion, as well as north side, south side and east end, number of additional streets, have been submitted as amendments to contract ordinance. These repaving items raise total to be expended to \$233,000.

**Reading, Pa.**—Council will be recommended to authorize appropriation of \$250,000 for repaving of city streets.

**Reading, Pa.**—Bills have been introduced for paving Bingham st., Carpenter st. and 11th st.

**Williamsport, Pa.**—Paving of Hepburn st. is being discussed.

**Williamsport, Pa.**—Question of paving Erie ave. west to Berger st. is being discussed.

**York, Pa.**—Proposed widening of West Market st., from West st. to Belvidere ave., will cost city about \$23,000.

**York, Pa.**—As a step in City Beautiful campaign York will spend \$23,000 in property damages to widen 18 to 25 ft. block on W. Market st., giving entire highway continuous width of 80 ft.

**York, Pa.**—Petition has been received asking for extension of asphalt surface on East Market st., from Sherman st. to city limits.

**Newport, R. I.**—Council has appropriated \$7,000 for dust prevention, and is considering what oil to use.

**Newport, R. I.**—Question of proper binder for Bellevue ave. is being discussed.

**Woonsocket, R. I.**—Board of Aldermen is discussing oiling of city streets.

**Woonsocket, R. I.**—Petition to make Nursery ave. public highway has been referred to Joint Standing Committee on Highways.

**Bristol, Tenn.**—Resolution introduced by R. H. Martin, providing for immediate purchase of road building outfit by county for purpose of keeping in repair new pike system, has been adopted.

**Bristol, Tenn.**—County Court has made appropriation for construction of highway from Bristol to Kingsport.

**Austin, Tex.**—Issue of road bonds for Liberty County Road District No. 1, \$125,000, has been approved by acting Attorney General for registration.

**Dallas, Tex.**—City Secretary has been instructed to advertise for bids for grading of Parry, between Haskell and Carroll, and of Carroll, between Parry and East Side. On former there will be a cut, sufficient the engineer estimated, to take care of fill in second. Cost ought not to exceed \$980.

**El Paso, Tex.**—Parking of Nevada st. has been asked by property owners.

**Galveston, Tex.**—Commissioner Austin will advertise for bids for paving of Broadway on both sides, from 12th to 40th sts., and on north side, from 12th to Seawall Blvd.

**Gainesville, Tex.**—Civil Engineer Truax and his corps of helpers are busy engaged surveying Gainesville and Denton rd. preparatory to beginning work of building good roads in this precinct.

**Marlin, Tex.**—Bids are being solicited by City Council for paving Railroad st., between Live Oak and Coleman sts. Six business thoroughfares have already been paved during past year.

**San Antonio, Tex.**—County Commissioners have ordered County Auditor to advertise for bids for road improvements covering several miles of county road. Bids will be asked for grading and graveling of Bandera rd., from end of old gravel road to 14½-mile point and grading and claying of Payne rd., from Summerset Townsite to Mud Creek. Fredericksburg rd. also will be graveled from 14½-mile point to 18-mile post. All bids will be asked for according to plans and specifications on file in County Auditor's office.

**Terrell, Tex.**—Bonds in sum of \$25,000 have been voted for permanent street improvement.

**Salt Lake City, Utah.**—Plans have been completed by State Road Commission for immediate commencement of work in Davis County on highway improvements to cost \$37,000. This will be spent on modern sprinkling system, which will cost more than \$17,500, and for grading and improving roads. An additional \$25,000 is to be provided for fall work.

**Bowling Green, Va.**—Resolution has been offered by A. F. Turner, directing Supervisors of County to present to court petition for bond issue, and calling for election. Resolution provides that county be authorized to issue bonds not exceeding \$125,000 for permanent improvements of roads of county.

**Norfolk, Va.**—Following matters have been adopted: Appropriating \$545 for curbing and paving Baltimore st.; authorizing bond issue of \$214,000 for 10th ward; appropriating \$810 for improvements on 19th st.; appropriating \$1,160 for improvements on Calvert and Landing sts.; providing improvements for Franklin court; providing plan of im-

provements for the 9th ward; appropriating \$744 for curbing and guttering on 19th st., between Williams ave. and Granby st.; referring to Finance Committee ordinance providing for extension of Salter st.; referring to Finance Committee appropriation of \$2,677 for paving Graydon ave., between Moran and Colonial ave.; establishing building line on west side of Church st., between Freemason and Charlotte sts.

**Everett, Wash.**—Engineer Barkhuff has received instruction to prepare plans and estimates for improvement of 41st st., from Colby to Wetmore aves.

**Everett, Wash.**—Petition calling for improvement of Hoyt ave., from Wall st. to Pacific ave. and Wall st., from Colby to Rucker aves. by paving with asphalt and cement sidewalks, has been presented to Board of Public Works.

**Goldendale, Wash.**—County Commissioners have ordered County Engineer to make permanent highway survey, with estimates of cost, on Maryhill rd., commencing at city limits of Goldendale. At least one mile of macadam road will be constructed this year with funds available.

**Tacoma, Wash.**—Question of issuing \$125,000 worth of bonds for construction of hard surface roads has been carried.

**Madison, Wis.**—State Highway Engineer A. R. Harst has estimated that towns in Wisconsin voted about \$600,000 for State aid for highways at April 2 election.

**Fox Lake, Wis.**—It has been practically decided to oil streets instead of sprinkling them.

**Macfarland, Wis.**—New road will be constructed between Macfarland and Lake View as portion of highway improvement approved by electors of Dunn Township recently.

**Niagara Falls, Ont.**—Paving of Ferry and Main sts. has been authorized.

#### CONTRACTS AWARDED

**Los Angeles, Cal.**—By Board of Public Works, as follows: To Davies & Dysart, for improving Temple st., for \$20,851; to Standard Construction & Development Co., for improving Juanita ave., for \$13,500; to L. W. Patillo, for improving Sunset Blvd., for \$12,538; to Standard Construction & Development Co., for improving Rosetta st., for \$5,462. Following bids were received by Board of Public Works for improving W. First st., T st., Wilmington and San Pedro rds., requiring (a) 43,424 cu. yds. embankment in Divs. L & N, (b) 137,244 sq. ft. macadam Divs. L & N, (c) 133,760 sq. ft. shoulders Divs. L & N, and (d) 173,188 sq. ft. macadam Div. M: Leigh G. Garnsey, Union Oil Bldg.—price given per cu. yd. on (a) and per sq. ft. on (b), (c) and (d)—(a) 29 cts., (b) 7½ cts., (c) 2½ cts., (d) 8.73 cts., total, \$42,042 (awarded contract); Russel-Green-Foel Co., Higgins Bldg., (a) 59 cts., (b) 11 cts., (c) 3 cts., (d) 11 cts.; P. A. & C. H. Howard, Frost Bldg., (a) 40.1 cts., (b) 9 cts., (c) 2½ cts., (d) 9 cts.; Bent & Pennebaker, Central Bldg., (a) 33 cts., (b) 10½ cts., (c) 3½ cts., (d) 10½ cts.; Standard Construction & Development Co., (a) 57.8 cts., (b) 8 cts.; (c) 3 cts., (d) 8 cts.; Geo. A. Rogers, Stephenson and Merrick sts., (a) 35 cts., (b) 9 cts., (c) 3 cts., (d) 12 cts. To H. H. Curtis, for improving portion of Sixth st., at \$17,993; also for paving as follows: First st., to Fairchild-Gilmore-Wilton Co., for \$40,534, and Pritchard st., to Barber Asphalt Paving Co., at \$20,079.

**Pasadena, Cal.**—By City, for work on Elizabeth st., to J. E. Condon, for \$3,301.75.

**Oroville, Cal.**—By Board of Trustees, to E. J. Bowen, Marysville, at \$7,533, for paving Meyers st.

**Muncie, Ind.**—By Board of Public Works, for paving Elm, Jackson, Seymour sts., to M. M. Guinup, for \$13,619.

**San Francisco, Cal.**—For constructing roadbed of municipal railway on Geary st., from Kearny to Fifth ave., by Board of Public Works, to Bates, Borland & Ayer, at \$225,025.

**Hartford, Conn.**—To Southern New England Paving Co., at \$45,328, for asphalt paving on State, Grove, Front and Sheldon sts., by Board of Contract and Supply.

**Jacksonville, Fla.**—By Board of Commissioners of Duval County, to Sam Spencer, for clearing and grading Lake Shore Blvd. through Lake Side Park.

**Covington, Ga.**—By City Council, for six blocks of paving, to M. M. Marshall, of Oxford.

**Boise, Idaho.**—To Spokane Hassam Paving Co., for 6½ miles of paving on road extending from Boise to Meridian, at \$94,250.

**Chicago, Ill.**—For constructing asphalt repair plant, by Board of Public Works, to

Hetherington & Derner, of Indianapolis, for \$44,938.

**Monmouth, Ill.**—For construction of 15,000 sq. yds. of brick pavement, by City Council, to Burlington Construction Co., Burlington, at \$28,688. R. M. Ferguson is City Engineer.

**Bluffton, Ind.**—By County Commissioners, for four proposed gravel roads, as follows: Poneto st., Charles Henly, for \$7,731.60; Hixson Macadam st., a street on the west city limits, D. O. North, \$10,289; St. Ogden rd., J. N. Neff, \$3,620; Fred Carnal rd., James R. Crosbie, \$2,174.

**Bourbon, Ind.**—To J. J. Kelleher & Co., of Frankfort, for constructing two miles of brick pavement in Bourbon, for about \$60,000.

**Evansville, Ind.**—By Board of Public Works, for paving of Lincoln ave., to Western Construction Co. The street will be paved with Trinidad Lake asphalt, which is recognized as one of the best grades of paving asphalt in use. Property holders on Lincoln ave. filed petition with Board asking that this paving material be used. Bid was \$1.95 per sq. yd. for street and 41 cts. a ft. for cement curb and gutter. Contract for improvement of Louisiana st., from First ave. to Main st., was awarded to contracting firm of Hollerbach & May. Board decided on Carlyle brick with sand filler as material for paving street. Bid submitted by successful firm was \$1.69 per sq. yd. Carlyle brick was given careful test by Board and proved satisfactory.

**Indianapolis, Ind.**—By Board of Public Works, to A. D. Brown, for improvement of 36th st., from Kenwood to Capitol sts., at 13 cts. per sq. ft. for sidewalks and 65 cts. per lin. ft. for curbing.

**Marion, Ind.**—By Grand County Commissioners for construction of nine roads to lowest bidder on each road, as follows: W. P. W. Davis rd., Jefferson Township: Hoffman & Son, \$9,000; William O. Peele, \$10,885; Hanford R. Miles, \$10,843. O. C. Bowen, Superintendent. Howard Lyon rd., Jefferson Township Miles & Shaffer, \$8,392; John W. Slater, \$8,750. Howard Lyon, Superintendent. S. R. Fankbonyer rd., Center Township: John W. Slater, \$14,347; Brook & Co., \$14,300. E. O. Bloomer, Superintendent. August Schrandt rd., Franklin Township: William Yates, \$5,550. George Winchell, Superintendent. Peter Gotschall rd., Franklin Township: William Yates, \$5,245. George Winchell, Superintendent. John H. Weaver rd., Franklin Township: Bert O. Renbarger, \$4,347; McKee & Co., \$4,684. John H. Weaver, Superintendent. Arnaldo Bechtel rd., Franklin Township: Druok & Co., \$8,888; Mackey & Druckemiller, \$7,791; O. J. Simmons, \$9,120; Bert O. Renbarger, \$9,180. C. O. Apple, Superintendent. Simeon G. Kem rd., Pleasant Township: William Yates, \$7,943.25; Bert O. Renbarger, \$7,490. Simeon G. Kem, Superintendent. M. O. Mohler rd., Liberty Township: Lee McTurnan, \$6,700; Leroy Brookshire, \$6,474. M. I. Mohler, Superintendent.

**Muncie, Ind.**—For construction of Rectory gravel rd. in Harrison Township, to Curtis Rectory, by County Commissioners. Contract calls for completion of nearly three miles of gravel road, southeast of Gaston by Nov. 1. Contract price was \$5,365.

**Vincennes, Ind.**—For constructing C. H. Colgrove et al. gravel road, to Jesse Williams, for \$7,320.

**Laporte City, Ia.**—By City, for constructing 6,100 sq. yds. brick paving, to J. W. Turner Improvement Co., of Des Moines, at \$1.98 per sq. yd.

**New Orleans, La.**—By State Highway Commission, to Howard Eggleston, Engineer of the Perrolithic Good Roads Development Co., at \$52,412, for building road between Jeanerette and New Iberia, La.

**Boston, Mass.**—For construction of artificial stone sidewalks on Talbot ave., between Blue Hill ave. and Washington st., by Public Works Department, to Donovan & McCarthy, at \$6,226.

**Grafton, Mass.**—To A. T. Carchia, of Boston, for constructing State highway through Grafton, for \$10,112.

**Lynn, Mass.**—To Michael McDonough Co., for resurfacing of Nahant rd., his bid being \$29,045, the lowest. Bids were opened at State House, and following had submitted their figures: Hugh Nawn Construction Co., of Boston, \$43,447; Coleman Brothers, of Boston, \$31,882.82; David J. Sheehan Co., \$30,761.30, and Michael McDonough Co., \$29,045, the lowest.

**Benton Harbor, Mich.**—By City Council, to H. Vander Veen, Ashton Bldg., Grand Rapids, at \$1.25 per sq. yd., for construction of 13,000 sq. yds. asphaltic concrete, on 5-in. foundation, and 6,000 lin. ft. of curb and gutter. A. B. Spalding is City Clerk.

**East Grand Forks, Minn.**—By City Council, for paving De Mars ave., from Water st. to N. P. R. R., to General Contracting Co., Temple Court, Minneapolis, at \$46,340. James Gorman is City Clerk.

**Minneapolis, Minn.**—By Board County Commissioners, for regrade and regrade Brooklyn Center road distance of 18,000 ft., to J. J. Mergen, for \$13,500.

**Kansas City, Mo.**—By Board of Public Works, for street improvements, as follows: Grading, A. W. Wooley, 2819 Bellevue ave., and P. C. Fielding, 4100 Michigan ave.; sidewalks, Missouri Stone & Construction Co., Massachusetts Bldg., and G. M. Stack, 2842 E. Seventh st.; asphalt and concrete paving, F. P. McCormick, 2309 New York Life Bldg., and F. P. McCormick, 2309 Penn ave.

**Atlantic City, N. J.**—To Chas. T. Eastburn Co., Yardley, Pa., for paving 7,726 ft. of Longport rd., from Ventnor City to Margate City.

**Hackensack, N. J.**—For repairing Paterson plank road, to G. T. Brackett, for \$33,935.

**Paterson, N. J.**—By Board of Public Works, for improvement work on streets and pavements throughout the city as follows: For street pavement—Alabama ave., Mack Bros., \$3,286; Bond st., Vandenberg Bros., \$2,309; Bleeker st., Conlon & Foley, \$1,020; E. 7th st., Conlon & Foley, \$2,176; E. 22d st., (1) Vandenberg Bros., \$1,248.56; E. 22d st., (2) Vandenberg Bros., \$1,116.47; E. 22d st., (3) Vandenberg Bros., \$1,128.75; E. 27th st., Vandenberg Bros., \$1,246.50; E. 33d st., Vandenberg Bros., \$973.88; Halpine st., Conlon & Foley, \$520; John st., P. M. Bergen, \$306.25; Lafayette st., Vandenberg Bros., \$886.44; New st., Vandenberg Bros., \$1,768.31; Paxton st., Vandenberg Bros., \$871.28; Railway ave., Vandenberg Bros., \$3,884.06; Railroad ave., Kramer Bros., \$264; Sussex st., Vandenberg Bros., \$484.50; 20th ave., Vandenberg Bros., \$2,747.91; Wait st., Conlon & Foley, \$1,595; Little Falls road, Vandenberg Bros., \$11,992.25. For grading—8th ave., Vandenberg Bros., \$1,080; E. 19th st., P. M. Bergen, \$224; 4th ave., P. M. Bergen, \$3,640; Timothy st., P. M. Bergen, \$260; William st., P. M. Bergen, \$48. For sidewalks Ralph Campf (per ft.), 11½c.

**Brooklyn, N. Y.**—By President Brooklyn Borough, for paving as follows: Regulating and repaving with asphalt on a concrete foundation, Fulton st., from Alabama ave. to Crescent st., to Uvalde Contr. Co., 1 Broadway, New York City, as follows: 15,710 sq. yds. asphalt pavement, \$1.07; 80 sq. yds. old stone pavement relaid, 40c.; 2,180 cu. yds. concrete, \$5.65; 12,640 lin. ft. new curb, set in concrete, \$1.10; 1,400 lin. ft. old curb, reset in concrete, 65c.; 11 noiseless covers and sewer manholes, \$15; 150 lin. ft. granite heading stones set in concrete, 90c.; 200 lin. ft. bluestone heading stones set in concrete, 70c.; total, \$44,412. Other bidders: Barber Asphalt Paving Co., 30 Church st., New York City, \$47,707; Cranford Co., 52 9th st., \$45,033. For regulating and repaving with grade 1 granite on concrete foundation, Oakland st., from Ash st. to Driggs ave., to C. A. Myers, 1371 Nostrand ave., Brooklyn, as follows: 17,830 sq. yds. grade 1 granite pavement with grouted joints (one year maintenance), \$2.73; 100 sq. yds. old stone pavement relaid, 40c.; 2,970 cu. yds. concrete, \$4.50; 7,500 lin. ft. new curb set in concrete, 99c.; 3,030 lin. ft. old curb, reset in concrete, 55c.; 410 lin. ft. granite heading stones set in concrete, \$11; 160 lin. ft. bluestone heading stones set in concrete, 60c.; 4 new sewer manhole heads and covers, each, \$25; total, \$71,502. Totals of other bids: J. Mullen, 289 Fulton st., Jamaica, L. I., \$73,000; F. J. Gallagher, 490 Park pl., Brooklyn, \$75,013; J. H. Hogan, 527 8th st., Brooklyn, \$71,719; M. F. Hickey, 6th st. and 2d ave., Brooklyn, \$75,126; M. T. Meagher, 15 Orient ave., Brooklyn, \$71,567; Morton & Gorman, 301 Douglas st., Brooklyn, \$79,037. For regulating and repaving with grade 1 granite on concrete foundation, 3d ave., from Hamilton ave. to 26th st., to Henry Mullen, 289 Fulton st., Jamaica, L. I., as follows: 7,540 sq. yds. grade 1 granite pavement, with grouted joints (1 year maintenance), \$2.88; 40 sq. yds. old stone pavement relaid, 50c.; 1,255 cu. yds. concrete area, \$4.70; 4,050 lin. ft. new curb, set in concrete, \$1.05; 250 lin. ft. old curb, reset in concrete, 60c.; 150 lin. ft. bluestone heading stones set in concrete, 50c.; 250 lin. ft. granite heading stones set in concrete, 60c.; total, \$32,261.

**Mt. Vernon, N. Y.**—By Board of Aldermen, for South Fifth ave. improvement, to Eastern Asphalt Paving Co.

**New York, N. Y.**—By Department of Docks and Ferries, New York City, for paving Contract No. 1330, to Barber Asphalt Paving Co., 30 Church st., for 10,000 sq. yds. of repairs, at \$1.59 per sq. yd.

**Rochester, N. Y.**—By Board of Contract and Supply, as follows: Melville st.,

asphalt pavement, to Rochester Vulcanite Pavement Co., \$22,655; Portsmouth terrace, creosote of wood block pavement, Brotsch, Hempel & Brotsch, \$18,504; Spring st., asphalt pavement, Whitmore, Rauber & Vicinus, \$9,389.50; repair and maintenance of East Side Boulevard roadway, Town Board of Irondequoit, \$10,000; sprinkling for season of 1912, Bantel & Hartung, \$53,203.84, which is 63¼ per cent. of estimate.

**Rochester, N. Y.**—By Board of Contract, for asphalt pavement on Leighton st., to Whitmore, Rauber & Vicinus, for \$7,709, and for paving as follows: Davis st., brick pavement, Walter C. Margrand, \$4,725; Thayer st., asphalt pavement, Rochester Vulcanite Co., \$7,652, and same contractor for Emma st., asphalt pavement, \$4,121.

**Canton, O.**—By County Commissioners, for paving 1½ miles of road from Marlboro, east on Limaville road, to J. C. Devine & Co., of Alliance, for \$30,613.

**Columbus, O.**—By County Commissioners, for constructing roads as follows: Cole road, 2 miles, in Brown and Prairie townships, to Vogelsberg & Walls, for \$9,981; Kenny road, 3¼ miles, in Clinton and Perry townships, to Jewett & Keys, for \$26,677; Scioto and Mudsock road, 4½ miles, to J. N. Snouffer, for \$29,029.

**Muskogee, Okla.**—To Cleveland Trinidad Paving Co., for paving, etc., in Street Improvement District No. 140.

**Portland, Ore.**—By Council, for improvement of Malden ave. district in Sellwood with concrete pavement with asphalt dressing, to Kibbe-Welton Co., at \$29,822.

**Pittsburgh, Pa.**—By City, for cutting down of the "Hump," to Booth & Flinn, 1942 Forbes st., at \$640,532.

**Dallas, Tex.**—By Commissioners' Court, to W. T. Strong, for gravel to be used on Eagle Ford road. Contract calls for delivery of gravel for a distance of 5¼ miles at \$1.15 per 36 cu. ft.

**Dallas, Tex.**—By City, for grading of Kimble, between Forest and Pennsylvania, to Doty & Johnson, at 23 cts. per cu. yd.

**Granger, Tex.**—By City Council, for paving Main st., to J. O. Polehmus, of Austin.

**San Antonio, Tex.**—For graveling Chavez rd., by County Commissioners, to Milton Meier.

**San Antonio, Tex.**—To William T. Fulton & Co., for furnishing county with oil distributors for road purposes, total of their bid being \$1,833. Specifications of County Commissioners asked that this contract furnish three 400-gal. oil tanks, three road oil distributors, one gasoline engine and pump and a Hvas spreader. These will be used by county in maintaining roads surrounding San Antonio.

**Lynchburg, Va.**—By City, for improvement of Rivermont ave., from Jones st. to city limits, to Cleveland-Trinidad Asphalt Co., at \$190,296.20.

**Portsmouth, Va.**—For paving of Chestnut st., from Glasgow to South, to P. W. Ruth & Co., of Norfolk, Va. Their bid for work was placing cobble stones at 65 cts. per sq. yd. and granite curbing at 65 cts. per lineal ft.

**Richmond, Va.**—By City, to Thomas A. Barry & Co., to pave with granite spalls northern side of Broad st., west of Harrison st., to cost \$13,000.

**Spokane, Wash.**—To Spokane Paving & Construction Co., to build Apple Way road, on bid of \$28,930.

**Beloit, Wis.**—By City Council, to Geo. Welch, Beloit, at \$6,853, for paving Grand ave., from Third to Fourth sts.

**Green Bay, Wis.**—By Council, to White Construction Co., of Milwaukee, to improve East Walnut st., from Webster ave. to Baird st. with asphalt, at cost of \$16,300.

**Neenah, Wis.**—By City Council, to Christopher Johnson, Oshkosh, at \$43,922, for paving Wisconsin ave., from Walnut st. to Park ave., with creosote block. John Le Tourneaux is City Engineer.

#### BIDS RECEIVED.

**Louisville, Ky.**—For concrete sidewalk construction on Walnut st., as follows: Edwin S. Larson, 78 cts. to 85 cts. a sq. yd.; Louisville Asphalt Co., 78 cts. to 90 cts. a sq. yd.; American Concrete Construction Co., 78 cts. and 79 cts. a sq. yd.; L. W. Hancock Co., 90 cts. and 87 cts. a sq. yd., and G. W. Younger & Co., 83 cts. to 88 cts. a sq. yd.

**Syracuse, N. Y.**—For paving Otisco st., from South West to South Geddes st., uniform stone curb, with brick: W. J. Burns Co., \$39,237.85; F. S. Sposato, \$37,262; F. J. Baker, \$40,013, and with asphalt, \$38,159; G. B. Dickinson, \$39,749.60 with Cowan brick, \$39,502.40 with Potsdam brick and \$37,772 with asphalt; W. M. Bullard, \$36,833 with brick; Warner-Quinlan Asphalt Co., \$30,793.05 with



Cowan or Potsdam brick, \$41,411.05 with Metropolitan block and \$38,321.05 with asphalt; C. T. Hookway, \$36,121 with Porter brick, \$36,368.20 with any kind of brick, \$27,469 with macadam. Paving same street, combination curb: F. S. Sposato, \$38,719.50 with any kind of brick; William Bullard, \$35,237 with Bessemer brick; C. T. Hookway, \$33,876 with Porter brick, \$34,108 with any kind of brick and \$25,756 with macadam. Resurfacing with asphalt South Clinton st., from Water to Jefferson st.: Warner-Quinian Asphalt Co., \$6,460; G. B. Dickinson, \$6,915.20; F. J. Baker, \$7,103.40. Twelve-in. sewer in West Lafayette st., from No. 305 to Richardson st.: C. T. Hookway Construction Co., lowest bid, \$982. Twelve-in. sewer in Taylor st., from Renwick ave. to Almond st.: Jas. Swift, lowest bid, \$316.50. Twelve-in. sewer in South Beech st., from East Fayette st. to East Water st.: C. T. Hookway Construction Co., lowest bid, \$794. Grading Poplar st., from Lancaster to Comstock ave.: Berkeley Park Land Co., lowest bid, \$1,735.70. Twelve-in. sewer in Madison st., from South Beech st. to lot No. 38, block No. 365: C. T. Hookway Construction Co., lowest bid, \$439.50.

**Pittsburgh, Pa.**—For improvement of streets in "Hump District" to include excavation, 143,000 cu. yds.; paving, all classes, 29,000 sq. yds.; curbing, 22,300 lin. ft.; crossing stones, 4,800 sq. ft.; concrete sidewalks, 175,000 sq. ft.; terra cotta sewers, 17,100 lin. ft.: James H. McQuade Co., \$651,002 (lowest bidder); Booth & Flinn, Ltd., \$671,450; M. O'Herron Co., \$678,286; John F. Casey, \$683,386. Estimate, \$690,000. Lowest bids on other streets opened same time and place, as follows: Lambert st., Booth & Flinn, Ltd., \$40,697; Second ave., M. O'Herron Co., \$96,993, and Climax st., Ott Bros. Co., \$11,891.

## SEWERAGE

**Covina, Cal.**—Building of sewer outfall for joint use of several interior cities, down San Gabriel River to sea, is being discussed.

**Pasadena, Cal.**—Construction of 8-in. sewer, from Glenairn to California sts., is recommended.

**San Francisco, Cal.**—Ordinance has been passed for constructing sewer in San Jose ave., between Regent and Liebig sts., at cost not to exceed \$4,000.

**Sisson, Cal.**—Voters have decided to bond city for \$18,500 for sewer system.

**Augusta, Ga.**—City will shortly call for bids on Central ave. sewer. Sewer will be of brick, and be from 3 to 6½ ft. in diameter. It will connect with present sewer that has been put down on part of Central ave., and will extend to intersection of 15th st. and Wrightsboro rd., distance of about 3,700 ft. There has been \$20,000 set aside for this sewer.

**Fort Dodge, Ia.**—Final papers for drainage bond issue, in amount of \$25,431.79, are being prepared in County Auditor's office.

**Springfield, Mass.**—Board of Selectmen is considering plan to extend outlet 20 ft. into river.

**Escanaba, Minn.**—By vote of 1,218 to 905, people of Escanaba have indorsed proposition to issue bonds in amount of \$80,000 to allow construction of trunk sewer line from North Escanaba through west portion of city to point below Portage Island.

**Hibbing, Minn.**—Extensive sewer improvements will be made.

**Rochester, N. H.**—Petition from residents of Pine, Maple and Union sts. for service sewer has been referred to Committee on Roads, Bridges and Drains to investigate cost.

**Collingswood, N. J.**—Collingswood Sewerage Co. has awarded contract for two additional filter beds.

**Elizabeth, N. J.**—Ordinance for construction of sewer in Louisa st. has been adopted.

**Longport, N. J.**—Longport City Council has arranged to get bids for construction of the first part of its new sewerage system. It is proposed to build first pipe line on Colorado ave., and to make connections with Wiedner Training School, outflow for time being to be emptied into the Thoroughfare until such time as the entire sewerage system is constructed. This first expenditure may not exceed \$1,000. Later on city is to erect filter beds. Estimates for entire sewerage construction is placed at about \$14,000.

**Middleport, N. Y.**—Work will shortly be commenced on new sewer and water system; estimated cost, \$100,000.

**Poughkeepsie, N. Y.**—Sewer has been ordered constructed on Winnikee ave., from Mansion to Cottage.

**Rochester, N. Y.**—Board of Contract

and Supply will receive bids on contract for Section 6 of new sewage disposal system, embracing construction in open cut of outfall sewer with appurtenances, from Hudson ave. through Duke ave., List ave. and Pine Grove ave., about 9,000 ft. to site of disposal plant in town of Irondequoit.

**Walden, N. Y.**—D. C. Dominick has requested that 200 ft. of sewer be constructed on Coldenham rd. leading south from Orange ave.

**Barberton, O.**—Engineer Alcorn has presented plans and specifications for West Barberton storm sewers, also estimate, which was \$41,000. Mr. Alcorn stated that there would be about 10 miles of sewerage in West Barberton when completed.

**Cincinnati, O.**—Sewer Committee has reported that it would need \$250,000 for sewer improvements.

**Dayton, O.**—Bond ordinance in sum of \$102,000 will be recommended for immediate passage by Finance Committee of City Council. Of this amount sum of \$8,000 will be designed for payment of city's portion of expense for construction of sanitary sewers on Springfield st., in Ohmer Park, on Negley pl. and on Sundarland ave., and \$35,000 will be appropriated for construction of storm water sewers in various sections of city.

**Girard, O.**—Village Clerk has been instructed to advertise for bids for construction of sewers in State st.

**Springfield, O.**—Construction of sewers Wittenberg ave. and very addition and on Wilson ave. will be considered.

**Eugene, Ore.**—Voters have authorized \$200,000 bond issue for installation of main trunk sewer to drain city, and provide basis of sewer system for next 40 years.

**Altoona, Pa.**—Ordinance is being considered providing for special election on June 25 for voting on proposed loan of \$150,000, of which \$100,000 will be used for constructing sewage disposal plant.

**Corry, Pa.**—Commissioner of Health Samuel G. Dixon has approved plans for purification of sewage of Corry, which is to complete in three years system of purification of drainage now emptying into streams in that vicinity.

**Erie, Pa.**—Resolutions have been adopted for construction of sewers in 24th st. and Parade st.

**Harrisburg, Pa.**—Consulting Engineer Fuertes, of the Board of Public Works, has submitted tentative plans for protection of intercepting sewer along river front. These include series of reinforced concrete steps from low water mark to 14-ft. walk, which will extend from one end of sewer to other.

**Harrisburg, Pa.**—Two ordinances have been introduced. One came from Mr. Taylor, First Ward, and provided for sewers in 18th st., from Wayne to Revere; Revere, from 18th to point east of 17th, and Wayne, from 18th to point east of 17th. Other ordinance by Mr. Gardner and provided for sewers in Summit and Honey sts.

**Norristown, Pa.**—City is considering construction of sewage disposal plant.

**Reading, Pa.**—Bills have been passed for construction of pipe sewers on Maple st., storm water sewers on Oley st. and on Pearl st.

**York, Pa.**—Board of Public Works has delayed action upon selection of engineer to prepare data for completion of sanitary sewerage system, pending action of Mayor Lafean upon budget, which contains item of \$1,000 for this purpose.

**Fairmount, R. I.**—Extension of city sewer system is being considered.

**Woonsocket, R. I.**—Ordinance providing for sewers on Rathbun st., Adams st. and Manville rd. have been passed; also resolution adding \$5,420 to sewer construction appropriation for building these sewers was sent to Finance Committee.

**La Grange, Tex.**—A proposed bond issue of \$17,000 for sewerage has been carried.

**Pecos, Tex.**—Application has been made to Mayor and City Council of Pecos for 50-year franchise to construct throughout city sanitary sewerage system, with option by city to purchase at end of 10 years. Application was signed by F. W. Johnson, president of Pecos Land Co. He guarantees to complete system within two years and to construct same along modern lines.

**Wheeling, W. Va.**—Consulting Engineer Millar, of Wheeling, with Civil Engineer H. J. Watson, who has surveyed town for new sewerage system, and Street, Grades and Alley Committee will go over town before making final plans to advertise special election to vote upon \$15,000 bond issue for sewerage system.

**Milwaukee, Wis.**—Bond issue of \$265,000 has been voted for construction and improvement of flushing tunnels, with building and machinery for operating same.

**Superior, Wis.**—Board of Public Works will construct main sewer in Billings Park. Sewer will be located in alley south of Belknap st., and will extend from alley between Susquehanna and Lackawanna aves. to Elmira ave.

## CONTRACTS AWARDED

**Los Angeles, Cal.**—By Board of Public Works, for Hollywood main sewer, to P. A. & C. H. Howard, for \$347,957.

**Putnam, Conn.**—By City, to The Petrossi Co., Hartford, Conn., for construction of sewer Contract No. 9, at following bid: 1,200 ft. 12-in. pipe, at \$2.15; 1,400 ft. 10-in. pipe, at 65 cts.; 13,000 ft. 8-in. pipe, at 45 cts.; 900 ft. 6-in. pipe, at 40 cts.; 11 8-in. manholes, at \$37; 53 4-in. manholes, at \$22; total, \$11,273. Total of other bids as follows: G. B. Rice, \$13,319; A. D. Ambrosio, \$14,007; Pierson Engineering & Construction Co., \$14,451; Michael A. Gammino, \$14,480; Angelo Contico, \$16,206; Thomas Bruno, \$16,410; Frank A. Gammino, \$16,725; Antonio Lombro, \$16,771; Marcello Construction Co., \$17,179; W. B. Bryne, \$17,697; Corder & Montague, \$19,354; Henry Spinach, \$21,391; Ahearn Bros., \$23,069; Brigham & Mogavero, \$24,280. Geo. W. Perry, City Engineer.

**Pocatello, Idaho**—By City, to Jas. Kennedy Construction Co., Salt Lake City, Utah, for construction of sewer laterals in six districts. Following are bids received: P. O'Brien Construction Co., Denver, Col., \$46,975.10 (bid thrown out); Jas. Kennedy Construction Co., Salt Lake City, Utah, \$70,439.90; Gilkerson Construction Co., Salt Lake City, Utah, \$61,118.76 (bid on five districts only); Lindstrom & Oren, Billings, Mont., \$75,459.21; R. M. Bardsen & Co., Butte, Mont., \$86,118.12; K. Sauset, Corvallis, Ore., \$84,663.14; Wheelwright Construction Co., Ogden, Utah, \$88,008.20; Bannock Engineering Co., Pocatello, Idaho, \$96,845.07; Odegard & Kelley, Kalispell, Mont., \$132,845. Engineer's estimate, \$83,327.90. J. P. Congdon, Consulting Engineer, Boise, Idaho.

**Fort Scott, Kan.**—By City, for construction of sewer extension No. 5 to District No. 7, to Thogmartin & Gardner, at following prices: Eight-in. pipe laid, 26½ cts. per lin. ft.; 8-in. "Y" junctions laid, 90 cts. each; lamp holes, \$5 each; earth excavation and refilling, 60 cts. per cu. yd.; rock excavations and refilling, \$3.90 per cu. yd.

**Baltimore, Md.**—For sanitary contract No. 86, sewers in District No. 17, as follows: B. F. Sweeten & Son, Baltimore, Md., at \$95,124.35; D. M. Andrews & Co., Baltimore, Md., at \$106,709.75; Ryan & Reilly, Baltimore, Md., at \$112,140.50; Whiting-Turner Construction Co., Baltimore, Md., at \$113,115.60; James Ferry & Son, Pittsburgh, Pa., at \$117,456.75. C. W. Hendrick, Chief Engineer, Baltimore, Md.

**Boston, Mass.**—For construction of sewer in Colonial rd., Brighton District, to George J. Regan, and for sewer in Sturgis rd., West Roxbury District, to Carmin Russo.

**Lansing, Mich.**—By Board of Commissioners of Ingham County, to Price & Hurley, Marion, Ind., at \$27,000, for toll gate drainage.

**Lowell, Mich.**—By City, for construction of sewers, to Martin Deu Boer, at following bid: 262 ft. 8-in. tile 12-ft. deep, at 81 cts.; 834 ft. 10-in. tile 12-ft. deep, at 91 cts.; 428 ft. 12-in. tile 13 ft. deep, at 97 cts.; 5,020 ft. 15-in. tile, 1,800 ft. 2-ft. deep and 3,220 ft. 16-ft. deep, at \$1.21; manholes 12 ft. deep, at \$45, and 17-ft. deep, at \$80; total, \$9,174.64. Other bids as follows: P. DeWitt, \$10,751.40; Vesey Hey & Kloot, \$10,903.95; Vanderwell Bros., \$12,595.98. E. H. Christ, City Engineer, Grand Rapids, Mich.

**Marquette, Mich.**—By Park Cemetery and Street Commission, to Eric J. Johnson, at \$710, for constructing outlet for trunk sewer in Lake st.

**Duluth, Minn.**—By Board of Public Works, for construction of Woodland sewer, to Hugh Steele, of Duluth, for \$35,303.

**California, Mo.**—For constructing three miles of tile sewer and three septic tanks, to Inman & Burras, Kansas City, Mo., at \$11,350.

**Kansas City, Mo.**—By Board of Public Works, to E. H. Owens, 2,715 Indiana ave., for constructing sewer.

**Kansas City, Mo.**—By Board of Public Works, for constructing sewers, to Rushmore & Gowdy, 3606 Chestnut st., for \$26,470.

**Fullerton, Neb.**—For constructing sewer system, to Midwest Engineering Co., of Omaha, for \$4,500. Engineers are Bruce & Standeven, 432 Bee building, Omaha.

**Corning, N. Y.**—By Board of Public Works, for storm and sanitary sewer ex-

tension, to T. W. Green, of Corning, for \$4,302.

**Rochester, N. Y.**—By Board of Contract and Supply, for sewage disposal, Section 6, to Jacob Allmeroth, at \$123,900.

**Troy, N. Y.**—By Board of Contract and Supply, for constructing sewers, as follows: Central ave., Geo. J. Broderick, city, \$924.70; Kinlock ave., Golden & Allen, city, \$893.40.

**Cincinnati, O.**—For constructing sewers, to Thomas Maloney and Jos. J. Brown, at \$5,218.40 and \$3,364.25, respectively.

**Salem, O.**—To Luell & Baker, of this city, for contract for Prospect st. sewer. John Gunn, of this city, and John Wilson, of Alliance, were also bidders.

**Portland, Ore.**—For constructing both sections of E. Stark st. sewer, to Consolidated Contract Co., section extending from river to E. 21st st., for \$63,742, and for section extending from E. 21st st. to E. 41st st., \$109,000; contract was awarded to Pacific Bridge Co. for \$35,206.

**Providence, R. I.**—By Board of Contract and Supply for sewer work, to Fred. E. Shaw, for about \$5,846.

**Sioux Falls, S. Dak.**—For construction of sewers in Divisions 1 to 6 inclusive, to Dearborn & Jackson, Cedar Rapids, Ia., at \$168,730.

**Spokane, Wash.**—To Lang & Smith, for constructing sewers on 17th ave. and Upper Terrace road, for about \$6,660.

**Tacoma, Wash.**—For constructing sanitary sewers with Indian addition, to John Gallucci, for \$23,000.

**Oak Bay, B. C.**—By Council, for construction of main trunk sewer, to Naylor Bros., Vancouver, B. C., for \$119,260.75. Other bidders: Robt. McLean & Co., \$138,400; Hugh McDonald, \$145,359; Victoria Machinery Co., \$153,545; Jeffrey & Burton, \$156,076, and Jas. McDonald & Co., \$168,267.

**Regina, Sask.**—By City Commissioners, for constructing 13,204 lin. ft. 45, 42 and 40 inch reinforced concrete sewer pipe, 2 filter beds, stand-by tank, steel roofs for filter beds, as follows: Contract No. 1, excavating trench, laying concrete pipes and backfilling 7th ave., from Albert st. to Toronto st., to Wilson, Townsend & Saunders, of Moose Jaw, for \$18,312; Wilson, Townsend & Co., \$24,893, for construction of two filter beds, one stand-by tank and pipe lines; for blocks for false floors in the filter beds, to Freeland Bros., at \$4,693; for steel roof over the filter beds, to Western Steel & Supply Co., \$8,400. J. A. MacKay is chief engineer trunk sewer works.

## WATER SUPPLY

**Red Bluff, Cal.**—Estimate made by City Engineer W. F. Luning for complete water system for city of Red Bluff places cost at \$85,325. Water plant of Antelope Water Co., which now furnishes town with water, is offered by company to city for \$123,000, or for sum \$34,675 in excess of sum that new and modern plant is estimated to cost.

**Sisson, Cal.**—Voters have decided to bond city for \$20,000 for purchasing water system.

**Watsonville, Cal.**—According to plans announced Watsonville Water Co. is to locate monster pumping plant and reservoir right in heart of this city. Additional supply will amount to more than 3,000,000 gal. daily if it is needed.

**East Hartford, Conn.**—Petition has been received from number of Glastonbury residents asking for extension of water main on Main st. in that town. Matter was referred to Superintendent John H. Walsh for investigation.

**Washington, D. C.**—An American legation in foreign country reports that local Government will undoubtedly in short time take measures to install systems for supply water to two cities in country. Government intends that this enterprise shall be given to private company under franchise for 99 years. Bids for this franchise will be invited and award will be made to bidders offering lowest metered rates to consumers. Coupled with this proposition is one for construction of modern sewer system for two cities, annual charge being permitted for all entries thereto, and award being similarly based upon prices fixed for such entry. These franchises are valuable ones, and projects should command attention of American capitalists and contractors. Bureau of Manufactures, No. 8575.

**Macon, Ga.**—At meeting of Water Commissioners it was decided not to build reservoir in East Macon, but to construct auxiliary pumping station near present plant with capacity of 7,000,000 gals. Board instructed Engineer Langworthy and Superintendent Wilcox to prepare suitable plans.

**Indianapolis, Ind.**—Board has ordered extensions of water mains.

**Miamond, Ind.**—Bids of Richmond City Water Works Co. and E. M. Campfield Co. have been rejected by Board of Works.

**Sioux City, Ia.**—Laying of 16-in. pipe line, from 24-in. main on 24th st., has been authorized.

**Ayres, Mass.**—Petition is being considered for better water system in village.

**New Bedford, Mass.**—Appropriation of \$160,000 has been authorized for special extension and renewals of water mains.

**Kalamazoo, Mich.**—Bond issue of \$55,000 has been voted for standpipes.

**Saginaw, Mich.**—Report of Gardner S. Williams, Consulting Engineer, Ann Arbor, is being considered for installation of water supply from Saginaw Bay for city.

**Chisholm, Minn.**—Superintendent C. J. Sullivan, of City Water Department, has recommended to Water Commission, buying of additional pump with capacity of 1,000 gals. per day, for use in case of emergency and erection of new building.

**Red Lake Falls, Minn.**—Proposition to bond city in amount of \$25,000 for construction of water works system in Red Lake Falls will be submitted to vote of people at election to be held on Tuesday, May 14.

**Milville, N. J.**—Purchase of plant of Milville Water Co. is being discussed.

**Ferth Amboy, N. J.**—Proposition to increase water supply at city's pumping station in Runyon and to filter supply at hand were subjects of long discussion at meeting of Board of Water Commissioners.

**Middleport, N. Y.**—Work will shortly be commenced on new water and sewer system; estimated cost, \$100,000.

**Dayton, O.**—Ordinance has been passed for issuance of bonds for improving and extending water works system of city. Wayne G. Lee, Clerk of Council.

**Dayton, O.**—City Council has passed ordinance providing sum of \$25,000 for purpose of giving water relief to residents of Dayton View and Riverdale this coming summer.

**Hubbard, O.**—At meeting of Village Council sale of water works bonds was awarded to Hayden, Miller & Co., of Cleveland, their bid being \$2,340 premium on the \$30,000 issue at par and accrued interest.

**Central Falls, R. I.**—Report of City Engineer, to whom had been referred getting estimate of cost of laying 8-in. water main on Fletcher st. and sewer, showed that cost of job recommended would be about \$4,800.

**Rock Hill, S. C.**—Public Works Commission, in few days, will circulate petition asking City Council to order election to authorize issue of \$50,000 of bonds for building extension of water works needed to obtain water supply from Catawba River.

**Bruce, S. Dak.**—At regular election to be held here April 16, proposition of installing municipal water works system will be submitted to voters.

**Pecos, Tex.**—It now seems probable that Pecos will construct modern water systems. Plant will furnish pure soft water and is planned to meet requirements of city of 13,500 people. Cost of plant as estimated by Palestine engineer and as checked out by Denver and Dallas civil engineer is nearly \$90,000.

**San Antonio, Tex.**—Extension of water service in West End for 1,500 ft. along Bandera ave. has been agreed to by Committee of City Council and Water Supply Co. upon petition from people of that street residing between Murphey and Johns sts.

**Terrell, Tex.**—Bonds in sum of \$20,000 have been voted for water works improvements.

**Manassas, Va.**—Construction of water system, to cost \$75,000, is being considered.

**Parkersburg, W. Va.**—Bids will be received by City Commissioners at City Clerk's office until 3 p.m., May 9, for purchase of \$100,000 worth of bonds for construction of reservoir for storage and distribution of water.

**Two Rivers, Wis.**—Appropriation of \$15,000 has been made for enlargement of municipal water works plant.

## CONTRACTS AWARDED

**Orland, Cal.**—To D. B. Vincent Co., of Oakland, for installing municipal water and sewer system, for about \$37,000.

**Turlock, Cal.**—For constructing lateral No. 5½ and altering lateral No. 7, to Sam Witmer, at \$25,500.

**Donnellson, Ia.**—For 5,370 ft. 8-, 6- and 4-in. pipe, 7 valves, 15 vdrants and a 40,000-gal. steel tower and tank from plans of Hall & Adams, Engineers, Centerville, to Des Moines Bridge & Iron Co., of Des Moines, for \$3,760.

**Fort Wayne, Ind.**—For furnishing water pipe, by Board of Public Works, to James B. Clow & Sons, Chicago, Ill., at \$22.85 per ton for 12-in. pipe, \$23 for 6-in., and 2½ cts. per lb. for specials. Total cost about \$11,400.

**Chicago, Ill.**—By Commissioner Public Works, for furnishing and erecting in Lake View pumping station, Monroese and Clarendon aves., one vertical triplex single-acting pump driven by direct-connected triple-expansion condensing engine, to Bethlehem Steel Co., of South Bethlehem, Pa., for \$89,900.

**Boston, Mass.**—By Metropolitan Water & Sewerage Board, for cast iron water pipes and special castings, to Warren Foundry & Machine Co., of New York, for \$4,672.

**Pittsfield, Mass.**—By Board of Public Works, for laying water pipe, Sections 5, 6 and 7, and contract for Section 5, to Edw. B. Roberts, of Boston, for \$10,724, and Section 7, to Simpson, Corbin & Co., of New York, N. Y., for \$9,874. Following are the bids received for Section 6: Peirson Engineering & Construction Co., \$15,270; Edw. B. Roberts, \$16,206; W. B. Bryne, \$16,803; M. L. Camarco, \$17,053; Golden & Allen, \$17,072; John E. Palmer, \$17,500; Michael Russo, \$18,577, and R. H. Newell Co., \$22,883.

**Clarksdale, Miss.**—By Superintendent Water Works, for furnishing a water-tube boiler and a feed pump, to Murray Iron Works, of Burlington, Ia., for \$2,840.

**St. Louis, Mo.**—To American Construction Co., 5018 S. Grand ave., for laying 39,777 ft. 6-in. and 5,990 ft. 12-in. pipe, 100 cu. yds. rock cutting and 860 cu. yds. embankment and 134 are hydrants, for \$10,525; and for 4,870 ft. 36-in. pipe, 50 cu. yds. rock and 6 fire hydrants, for \$9,521.

**Snyder, Neb.**—By Village, for constructing water works, to Katz Construction Co., of Omaha, for \$9,000.

**Bayonne, N. J.**—By City Council, for new 16-in. water line in the Constable Hook Section, to B. N. Braunworth, of New York, N. Y., for \$6,572.

**Schenectady, N. Y.**—For water pipe, by Board of Contract and Supply, to Charles Miller & Son Co., of Utica. Other bidders were: R. D. Wood & Co., of Philadelphia; United States Cast Iron & Foundry Co., of Philadelphia, and Donaldson Iron Co. of Pennsylvania.

**Yonkers, N. Y.**—By Secretary Board of Contract and Supply, for furnishing and installing high-duty pumping engine and appurtenances, to International Steam Pump Co., 115 Broadway, New York City, for \$21,000.

**Carlton, Ore.**—For construction of gravity system of water works from plans of Stannard & Richardson, of Portland, to Jas. Kennedy Constructing Co., of Fargo, N. Dak., at \$31,061. Work includes concrete intake, 400,000-gal. reinforced concrete reservoir, 37,000 ft. 6-in. wood pipe for supply line and for distributing line 8,730 ft. 10-in. wood pipe, 2,600 ft. 8-in. wood pipe, 2,415 ft. 6-in. wood pipe and 6,120 ft. 4-in. wood pipe, including air valves, blow-offs, gates, hydrants, etc.

**Aspinwall, Pa.**—For constructing reservoir, to Michael Kruth, Sharpsburg, Pa., at \$8.91 per cu. yd. for concrete work and 97 cts. per cu. yd. for excavating.

**Bethlehem, Pa.**—For furnishing pipe for new municipal water system, to Donaldson Iron Co. R. E. Neumeyer is Borough Engineer.

**Madison, S. Dak.**—By City, to Deane Steam Pump Co., for one 600-gal. pump and 60 horsepower Remington oil engine and one 400-gal. pump and 40 horsepower Westinghouse motor, for \$7,254. Engineers, Missouri Valley Engine Co., of Mitchell, S. Dak.

**Corpus Christi, Tex.**—To J. C. Hall, for putting in new casing at Artesian Park well, at \$1.20 per lineal ft.

**Richmond, Va.**—By City, to Hunter B. Frischkorn, for water meters, at \$9.375.

**Sheridan, Wyo.**—By City, for constructing 8,000 ft. 4-in. cast iron water pipe, to Walsh & Patterson, of Sheridan, for \$7,018.

**Brampton, Ont.**—By Superintendent Water Works, for constructing reservoir, to John Patterson, of Brampton, for \$3,600, and 30c. per cu. yd. for excavation; contract for pumps and motors will be awarded later.

## LIGHTING AND POWER

**Vallejo, Cal.**—Bond issue of \$100,000 has been authorized by City Council for establishment of municipal light and power plant.

**Macon, Ga.**—Water Commissioners have finally decided to use electricity as motive power for operation of water plant.

**Indianapolis, Ind.**—Board has decided



to invite Citizens Gas Co. and Indianapolis Gas Co. to submit bids for gas lights in Garfield and Riverside Parks and in Maple rd. blvd.

**Indianapolis, Ind.**—Bid for gas lights in city parks has been submitted to Board of Park Commissioners by Sun Vapor Street Lighting Co., which offers to supply such lights at \$26 a year each, where lights are to burn year around, or at rate of \$27 a year when they burn only during park season.

**Kalamazoo, Mich.**—Bond issue has been voted for municipal lighting plant.

**South Lyon, Mich.**—Taxpayers have voted in favor of selling municipal lighting plant to Eastern Michigan Edison Co.

**Ypsilanti, Mich.**—Municipal ownership of gas plant has been authorized.

**Duluth, Minn.**—Board of Water and Light Commissioners has authorized Manager Case to advertise for bids for furnishing pipe for gas feeder main from plant of Zenith Furnace Co. to 25th ave. west, from which plant board has two mains running east. New main will be 17,784 ft. in length, and will be of 12-in. lap-welded steel pipe, with mineral coating. New work will entail expenditure of about \$28,000.

**Biloxi, Miss.**—City is contemplating erection of electric light plant to take care of 25,000 people. T. Heidenheim, John Kennedy, J. C. Batton are members of committee.

**Amsterdam, N. Y.**—Municipal lighting plant has been advocated by Mayor Dealy and committee has been appointed to investigate feasibility of scheme.

**Canisteo, N. Y.**—Village Council is considering lighting street with electricity.

**Little Valley, N. Y.**—Taxpayers have approved of franchise granted United Natural Gas Co. by Village Board at special election.

**Kernersville, N. C.**—Kernersville has voted to issue \$5,000 in bonds for municipal improvements. Improvements will include purchase of electric light plant which was built two or three years ago.

**Valley City, N. Dak.**—Franchise has been granted Valley City Gas Co. to install complete gas system in city.

**Philadelphia, Pa.**—Improved street lighting, by installation of twin-arm system, has been advocated before Mayor Blankenburg for portions of Girard ave., 29th st., Susquehanna Ridge, Columbia and Lehigh aves.

**Springfield, O.**—Bond in sum of \$60,000 will shortly be sold for municipal lighting purposes.

**Erie, Pa.**—Plan is being considered for making State st. a great "White Way" by installation of new Tungsten pedestal electric lights.

**Dallas, Tex.**—C. W. Tippy has been granted franchise to construct and operate pipe line for delivery of gas to consumers for distance of five miles from city.

**Frankston, Tex.**—Installation of electric light plant is proposed.

**San Antonio, Tex.**—City Council has approved contract with San Antonio Gas & Electric Co. to provide street lights for period of five years.

#### CONTRACTS AWARDED

**Springfield, Ill.**—For construction of new heating plant in Peoria State Hospital, to Hanley-Casey Co., 410 West Ohio st., Chicago, at \$44,450.

**Brooklyn, N. Y.**—To Public Service Corporation of Long Island, to furnish light on public highways in New Hyde Park, by North Hempstead Town Board.

**Portland, Ore.**—To West Coast Engineering Co., for wiring and erecting cluster lights on Burnside bridge, for \$3,407, and Hawthorne bridge, for \$6,184. Contract for wiring and erecting electrolights on Morrison bridge was let to Northwest Electric Co., for \$3,827.

**Kennett Square, Pa.**—By Kennett Square Council, for lighting streets of that town, to Chester County Electric Co., at \$12 per year for 25-watt lamps and \$15 per year for 60-watt lamps.

#### FIRE EQUIPMENT

**Los Angeles, Cal.**—Question of combining fire engine house and police station in plans for municipal building at Hollywood, has been referred by City Council to Budget Committee.

**Sunnyvale, Cal.**—Purchase of 500 ft. of new fire hose is being considered by Council.

**Trinidad, Col.**—Appropriation of \$10,000 will be made for purchase of auto fire engine.

**Indianapolis, Ind.**—Mayor Shank has sent letter to Board of Public Works, requesting that Board ask City Controller Wallace to recommend bond issue of \$125,000, proceeds to be used in erection

of new combined fire and police headquarters building at southeast corner of Alabama and New York sts.

**South Bend, Ind.**—Sum of \$11,000 will probably be expended for purchase of motor fire apparatus.

**Council Bluffs, Ia.**—Report of Fire and Light Committee recommends new station for west end, to be equipped with combination chemical engine and hose wagon. Auto fire engine No. 3 is suggested; also automobile having combination chemical wagon.

**Des Moines, Ia.**—Purchase of two motor trucks, to cost \$11,000, is being considered.

**Boston, Mass.**—Appropriation of \$50,000 for auto fire apparatus is being considered.

**Stoneham, Mass.**—Appropriation of \$5,900 is being considered for purchase of motor fire truck.

**Crystal Falls, Minn.**—Motor apparatus will be purchased for local department.

**Manchester, N. H.**—Installation of new fire alarm system is recommended.

**Morristown, N. J.**—New auto hose wagon will be purchased.

**Canton, O.**—Bond issue of \$70,000 for Fire Department improvements will be authorized.

**Ellsworth, Me.**—Roy J. Goodwin, Chief Engineer of Fire Department, recommends the purchase of from 700 to 1,000 ft. of new hose and another hose truck.

**Cincinnati, O.**—Purchase of three combination automobile chemical engines for suburban service has been decided on by Safety Director Cash and Fire Chief Bunker.

**Dayton, O.**—City Council will appropriate \$25,000 for purchase of three motor-driven combination fire wagons, one automobile patrol and auto for fire chief.

**Springfield, O.**—Bond issue of \$50,000 is being considered for two additional stations and fire autos, etc. Purchase of about 10,000 ft. of new hose will also be considered.

**Freedom, Pa.**—Fire Department is considering purchase of 90 horsepower auto chemical and hose truck to cost about \$5,500.

**Chambersburg, Pa.**—Aerial truck will be purchased by Franklin Fire Co. A. M. Stager is chairman of Purchase Committee.

**Kingston, Pa.**—Purchase of new auto fire truck is being considered.

**Sharon, Pa.**—Purchase of combination motor truck has been authorized.

**Memphis, Tenn.**—Installation of auto fire apparatus is recommended.

**Newport News, Va.**—Council has decided to purchase 500 ft. of hose from Boston house, hose having been tested with 400 lbs. pressure and found to be first class. Purchase price was 80c. per ft.

**Attalia, Wash.**—Fire Department will purchase hose cart and supply of hose.

**Eau Claire, Wis.**—Purchase of three motor fire trucks is being considered.

**Green Bay, Wis.**—Purchase of 500 ft. of new fire hose has been authorized.

#### CONTRACT AWARDED

**Chicago, Ill.**—For supplying rubber tires to Fire Department for current year, to United States Tire Co.

**Sioux City, Ia.**—To Robinson Fire Apparatus Manufacturing Co., of St. Louis, Mo., for one of their "Jumbo" motor fire engines, at \$9,000.

**Jersey City, N. J.**—For new house for Pioneer Hose Co., of Union Hill, to Robt. Limouze & Brothers, by Union Hill Town Council, at \$12,635.

**Perth Amboy, N. J.**—By City, to American-La France Fire Engine Co., of Elmira, N. Y., for hook and ladder truck, at \$5,700.

**Ventnor City, N. J.**—For furnishing this city with front-drive tractor for aerial truck, to C. J. Cross & Co., 141 Broadway, New York, agents for Front Drive Motor Co., Hoboken, N. J.

#### BRIDGES

**San Francisco, Cal.**—Resolution appropriating \$11,433.82 for fund to build bridge across Beale st. cut at Harrison st., has been adopted.

**Amber, Ind.**—Commissioners of De Kalb County are considering reconstruction of Dills bridge, between St. Joe and Spencerville; also construction of Newville bridge, to cost \$20,000.

**Camden, N. J.**—Board of Freeholders has decided to build new steel bridge at Newton Creek on Broadway out of bond issue of \$50,000.

**Cleveland, O.**—Plans for Clark ave. bridge have been approved by Jennings Square Business Men's Association. City Engineer Hoffman explained the plans. The estimated cost is \$1,200,000. Director Springborn said it is thought that railroads will furnish about \$300,000 of

cost. Rest will be raised by bond issue, which Council already has authorized to amount of \$900,000.

**Dayton, O.**—City Engineer's Department has submitted plan to County Commissioners to erect new permanent bridge on present site of Millersford bridge, south of town. Bridge crosses Miami River on Cincinnati pike outside city.

**Dayton, O.**—Bonds in sum of \$65,000 for construction of Keowee st. bridge have been sold by City Auditor Bish to Brightwood German Banking Co., of Cincinnati, while Atlas National Bank, of Cincinnati, has purchased bonds sold for payment of city's share of paving of Forest ave. in sum of \$3,000.

**Dayton, O.**—Bids will be received until 10 o'clock a.m., Thursday, April 25, at office of Commissioners of Montgomery County, Ohio, for purchase of \$15,000 coupon emergency bridge bonds. J. O. Donovan, Secretary.

**Youngstown, O.**—When six bids for construction of Cray's Run bridge at West Lowellville were opened by County Commissioners, it was found that Wymer-Harris Construction Co. and Central Concrete & Construction Co. had submitted tie bids for work, using concrete blocks, their figures being \$1,500. Commissioners have taken matter under advisement.

**Collegeville, Pa.**—Collegeville Council has adopted resolution calling attention of Montgomery County Commissioners to need of repairing ancient Perkiomen bridge.

**Bristol, Tenn.**—Sullivan County Court has appropriated \$25,000 for building steel bridges.

**Tacoma, Wash.**—According to City Engineer W. C. Raleigh, plans for permanent municipal dock building south of new 11th st. bridge over city waterway will be carried out so as to provide three-story structure and also slip, coming within the \$120,000 appropriation.

#### CONTRACTS AWARDED

**East Haddam, Conn.**—For sub-structure of proposed drawbridge across Connecticut River, between Haddam and East Haddam, to Holbrook, Cabot & Rollins, 6 Beacon st., Boston.

**Jacksonville, Fla.**—To Edwards Construction Co., of Tampa, for constructing bridge over Trout Creek, for \$19,757. Other bids were: Converse Bridge Co., Chattanooga, Tenn., \$20,000; Virginia Bridge & Iron Co., Roanoke, Va., \$20,240; Southern Bridge Co., Birmingham, Ala., \$23,134; Austin Bros., Atlanta, \$21,787; Ovego Bridge Co., Macon, Ga., \$23,400; Midland Bridge Co., Kansas City, Mo., \$26,980; Mattair & Young, Jacksonville, \$25,000; W. C. Kienan & Co., Whitewater, Wis. (two bids), \$21,900 and \$18,900.

**Pecatonica, Ill.**—By Town, for constructing bridge and viaduct in Pecatonica Township, to H. W. Shons, of Freeport, for \$13,281.

**Virginia, Ill.**—To Walter Blake, of Appleton, Wis., for erection of \$6,000 reinforced concrete bridge.

**Marshfield, Mass.**—For rebuilding wooden pile bridge, 564 ft. long, over North River, near Humarock, to John T. Fitts, Greenbush, Mass., at \$7,649.

**Grand Island, Neb.**—By Board of Supervisors of Hall County, to Standard Bridge Co., Omaha, for construction and repair of all steel, wooden, pile and truss bridges for one year.

**Lancaster, N. Y.**—For constructing bridge over Cayuga Creek, at Aurora st., to Corry Bridge Co., Corry, Pa., at \$11,495.

**Poughkeepsie, N. Y.**—For building of concrete bridge and covering of Fallkill at junction of Mill and Clinton sts., to Charles Mitchell, at \$5,160.66. Other bids as follows: Morgan & Fielder, \$5,702.19; Tonington Co., \$7,260.62.

**Dayton, O.**—To Al S. Fox, of this city, by County Commissioners of Butler County, for construction of new bridge over Miami and Erie Canal, at Grand blvd., East Hamilton, consideration being \$9,927, and estimated cost, \$12,500.

**Staubenville, O.**—By Board of Commissioners of Jefferson County, for bridge work, as follows: Bridge No. 21, Wells Township, William Jackson, \$965.15; bridge No. 27, Island Creek Township, Ernest Steiz, \$850.50.

**Timn, O.**—To Universal Construction Co., for repairing Daniel Loose bridge, in Eden Township.

**Seguin, Tex.**—By Commissioners' Court of Guadalupe County, to Missouri Valley Bridge & Iron Co., to erect 173-ft span over Guadalupe River at Miller bridge, to cost \$6,400, this being lowest bid. Work is to be completed in 110 days.

#### MISCELLANEOUS

**Anniston, Ala.**—Mayor J. L. Winkle is advocating purchase of crematory for

disposition of city's garbage and he believes that such institution can be made self-sustaining. He would also establish municipal slaughter house and has made public other ideas for advancement of city.

**Sisson, Cal.**—Voters have decided to bond city for \$4,500 for building City Hall.

**Vallejo, Cal.**—Two bond elections amounting to \$115,000 have been authorized by City Council. It is proposed to spend \$75,000 as city's share of joint City Hall and branch County Jail and \$100,000 for establishment of municipal light and power plant.

**Denver, Col.**—Park Board of Denver has awarded contract for disposal of civic center bonds, paying 5½ per cent. to Henry L. Doherty & Co., of New York.

**St. Petersburg, Fla.**—County Commissioners of Pinellas County have adopted resolution calling for bond issue of \$370,000. Of this amount \$70,000 will be used in erection of jail and court house.

**Atlanta, Ga.**—Special Sub-Committee appointed to agree upon amount of proposed park bond issue is considering \$2,000,000 bond issue.

**Tifton, Ga.**—Voters will decide on May 11 on construction of court house by issue of bonds in sum of \$60,000.

**Richmond, Ind.**—Plans for municipal barn to be constructed near city light plant are being drawn in office of City Engineer Fred Charles.

**Winchester, Ky.**—It has been decided by Fiscal Court that new jail for Clark County should be built. Committee has been directed to purchase new site from city. Plans of Paulley Jail Co., of St. Louis, were accepted, and structure is to cost over \$22,000.

**Haverhill, Mass.**—Purchase of auto-patrol and auto ambulance is recommended by City Marshall Mack.

**New Bedford, Mass.**—Proposition to extend contract for collecting and disposing garbage of city will be presented at meeting of City Council.

**Springfield, Mass.**—Board of Fire En-

gineers has decided to purchase Packard automobile truck for use at Merrick fire station.

**Kalamazoo, Mich.**—Bond issue of \$25,000 has been voted for contagious disease hospital, and \$10,000 for tuberculosis sanitarium.

**Mt. Clemens, Mich.**—Proposition to bond county for \$20,000 for construction of cell block as addition to county jail has been carried.

**Quitman, Miss.**—Board of Supervisors of Clarke County has accepted plans for new jail to cost \$10,000. Plans will be submitted at their next meeting in May for a court house to cost \$40,000.

**Atlantic City, N. J.**—Bond issue of \$15,000 for extension of park system has been sold to Douglas-Fenick Co., of New York.

**Longport, N. J.**—Longport Council by resolution has authorized issuance of \$3,000 bonds for repairing of jetties and bulkheads along beach front.

**Yonkers, N. Y.**—Superintendent Edward A. Peene, of Water Bureau, recommends that new scales capable of weighing 20 tons be installed at Low Service station. He also recommends 20-ton scale for Tube Well station.

**Barberton, O.**—Question of garbage disposal plant is being discussed.

**Youngstown, O.**—Bids will be solicited for 10 barrels of bridge graphite.

**Eddystone, Pa.**—Council will ask permission of voters to borrow \$35,000 for public improvements.

**Erie, Pa.**—At meeting of Police, Dock and Harbor Committee it was decided to instruct City Engineer to advertise for bids for automobile patrol wagon to be used by Police Department.

**Harrisburg, Pa.**—Board of Public Works is prepared to advertise for bids for construction of river dam as soon as water recedes so that bidders would have chance to make careful estimates.

**Woonsocket, R. I.**—Installation of new police signal system is being discussed.

**Texarkana, Tex.**—Voters of Precinct 2 have voted bond issue of \$60,000, proceeds of sale of which are to be used to levee

and reclaim from overflow about 35,000 acres of rich Red River land lying northwest of Texarkana.

**Kelso, Wash.**—Plans for Kelso's new city hall building have been accepted by City Council. Building will cost about \$14,000.

**Milwaukee, Wis.**—Bond issue of \$110,000 has been voted for harbor improvements, and bond issue of \$30,000 for erection of branch library buildings.

#### CONTRACT AWARDED

**Springfield, O.**—To J. H. McHugh, contractor of this city, by Board of Control, for construction of concrete retaining wall at source of water supply of Water Works Department. The contract was for \$5,300.

**Richmond, Va.**—By City, to Harrison Brothers & Co., of Philadelphia, for alum for settling basins, at \$11,854.

#### BIDS RECEIVED

**Syracuse, N. Y.**—For sprinkling streets, as follows: Sprinkling First District: John Young, unpaved streets, \$2.25; paved, \$2.50; F. Peneitz, unpaved, \$1.98; paved, \$2.30. Second District: John Young, unpaved streets, \$1.58; paved, \$2.50; F. Peneitz, unpaved, \$1.58; paved, \$2. Third District: W. H. Kelley, unpaved, \$1.70; paved, \$2.50; C. P. De Long, unpaved, \$1.58; paved, \$2.20. Fourth District: Fred Kuntz, unpaved, \$1.55; paved, \$2.45; W. H. Kelley, unpaved, \$1.70; paved, \$2.50. Fifth District: C. P. De Long, unpaved, \$1.70; paved, \$2.65; W. H. Kelley, unpaved, \$1.59; paved, \$2.50. Flushing asphalt streets, Robert F. Barr, \$6.69, and Yowrey Brothers, \$6.46 per shift of eight hours.

**Rosalie, Wash.**—Committee of Rosalie City Council appointed to investigate bonding proposition has reported in favor of calling election on question of bonding town in sum of \$15,000, \$8,500 of which would be used in purchasing site and erecting new city hall and social center building.

## TOO LATE FOR CLASSIFICATION

### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Michigan	Bay City	Apr. 22, 9 a.m.	Constrn. sidewalks	R. O. Woodruff, Chm. Bd. Pub. Wks.
Massachusetts	Boston	Apr. 22, noon	Constrn. asphalt pavts in several streets	L. K. Rourke, Comm. Pub. Wks.
Massachusetts	Everett	Apr. 22	Furn. 1 or more tank cars of dust laying material	Wm. Walker, Chm. Bd. Pub. Wks.
Ohio	Urbana	Apr. 30, noon	Pavg. 1 mile water-bound macadam	County Commissioners.
Ohio	Logan	May 1, noon	Constrn. 1.59 miles concrete road	County Commissioners.
Ohio	Lancaster	May 4, 10 a.m.	Constrn. 4.28 miles water-bound macadam	County Commissioners.
Indiana	Kentland	May 6, 2 p.m.	Constrn. 2 macadam roads	E. R. Brigham, County Aud.
Indiana	Rushville	May 6, 2 p.m.	Constrn. macadam roads	J. M. Stone, County Aud.
Indiana	Kokomo	May 7, 10 a.m.	Constrn. 2 gravel roads	A. B. Easterling, County Aud.
Indiana	Logansport	May 7, 10 a.m.	Constrn. roads	J. E. Wallace, County Aud.
Indiana	Marion	May 7, 2 p.m.	Constrn. gravel and stone road	E. H. Kimball, Aud.
South Dakota	Michell	May 9	Pavg. Main st. and intersect. blocks with conc.; cost, \$45,000	City Council.
<b>SEWERAGE</b>				
Massachusetts	Boston	Apr. 22, noon	Constrn. pipe sewers and drains	L. K. Rourke, Comm. Pub. Wks.
Maryland	Westernport	Apr. 23, 6 p.m.	Constrn. pipe sewers	P. Curran, Mayor.
Alabama	Mobile	May 14	Constrn. 26,000 ft. 8 to 24-in. clay pipe sewers	City Commissioners.
Georgia	Sylvester	May 15, 5 p.m.	Constrn. 5 miles 8 to 12-in. sewers and septic tank	R. B. Pollard, City Clk.; J. B. McCrary Co., Atlanta, Ga.
<b>WATER SUPPLY</b>				
Texas	Wortham	Apr. 22	Drilling deep well	T. B. Poindexter, Mayor.
Maryland	Baltimore	Apr. 24	Constrn. underground feeders from high pressure pump. st'n	Board of Contract.
Georgia	Sylvester	May 15	Constrn. 4,650 ft. 6-in. c-i. pipe, etc.; furn. air compressor	R. B. Pollard, City Clk.
<b>BRIDGES</b>				
Ohio	Youngstown	May 16, 11 a.m.	Constrn. abutments of bridge, cleaning and painting	L. M. Hogg, County Aud.
<b>MISCELLANEOUS</b>				
Massachusetts	Boston	Apr. 29, noon	Bldg. police station and court house	M. J. Fish, Supt. of Bldgs.

### STREET IMPROVEMENTS

**Norwich, Conn.**—Users of road from Golden Spur into Waterford extension will learn with pleasure that State Highway Commissioner James H. MacDonald is to have new road built. Road will be about three miles long and will cost approximately \$30,000.

**Rushville, Ind.**—Petition has been filed with County Commissioners to pave Perkins st. in this city, under three-mile gravel road law. Four other petitions to improve county highways have been filed with Board.

**Seymour, Ind.**—Contract has been awarded by City Council for resurfacing several streets with concrete; work will begin at once.

**Tipton, Ind.**—Petitions have been filed with County Auditor for three gravel roads. If petitions are granted by Commissioners every road in Liberty Township will be gravel or crushed stone.

**Grand Haven, Mich.**—Special meeting of Board of Supervisors has been called at which time Board will organize and make arrangements for \$600,000 in road bonds which electors of county favored by their votes at April election.

**Grand Rapids, Mich.**—Proposition to bond Kent County for \$600,000 to construct good roads has been carried at recent election by majority of 1,198.

**Minneapolis, Minn.**—Board of County Commissioners has ordered County Surveyor and his assistants to draw plans and specifications for improvement of nine county roads at approximate cost of \$37,000. The roads to be improved are: Minneapolis and Shakopee, \$7,000; Minneapolis and Watertown, \$2,500; Rockford, \$8,000; Bass Lake and Crow River, \$3,000; Sixth ave. north extension, \$3,000; Penn ave., \$8,000; Ft. Snelling and Shakopee, \$3,000; Minneapolis and Monticello, \$1,500; Independence, \$1,000.

**Greenwood, Miss.**—City Council has

adopted resolution giving notice of its purpose to issue \$70,000 bonds for street paving. W. S. Allen, of Greenville, was selected as engineer.

**Belleville, Mo.**—City Engineer L. L. Harper, of Belleville, has announced he had completed plans for paving St. Louis rock road, known as West Main st., Belleville, from former city limits to Fekete ave., Edgemont, western terminus of West Main st.

**Lebanon, Mo.**—Election has been called for April 27 by Road District No. 1, which includes city of Lebanon, to vote on proposition to issue \$50,000 to build good roads in this district.

**Wellsville, Mo.**—Board of Commissioners of the Wellsville Special Road District has ordered special election on April 24 for purpose of voting bonds in amount of \$45,000 to be used in improving and graveling seven leading roads out of Wellsville.

**Bath, N. Y.**—State road contractor has